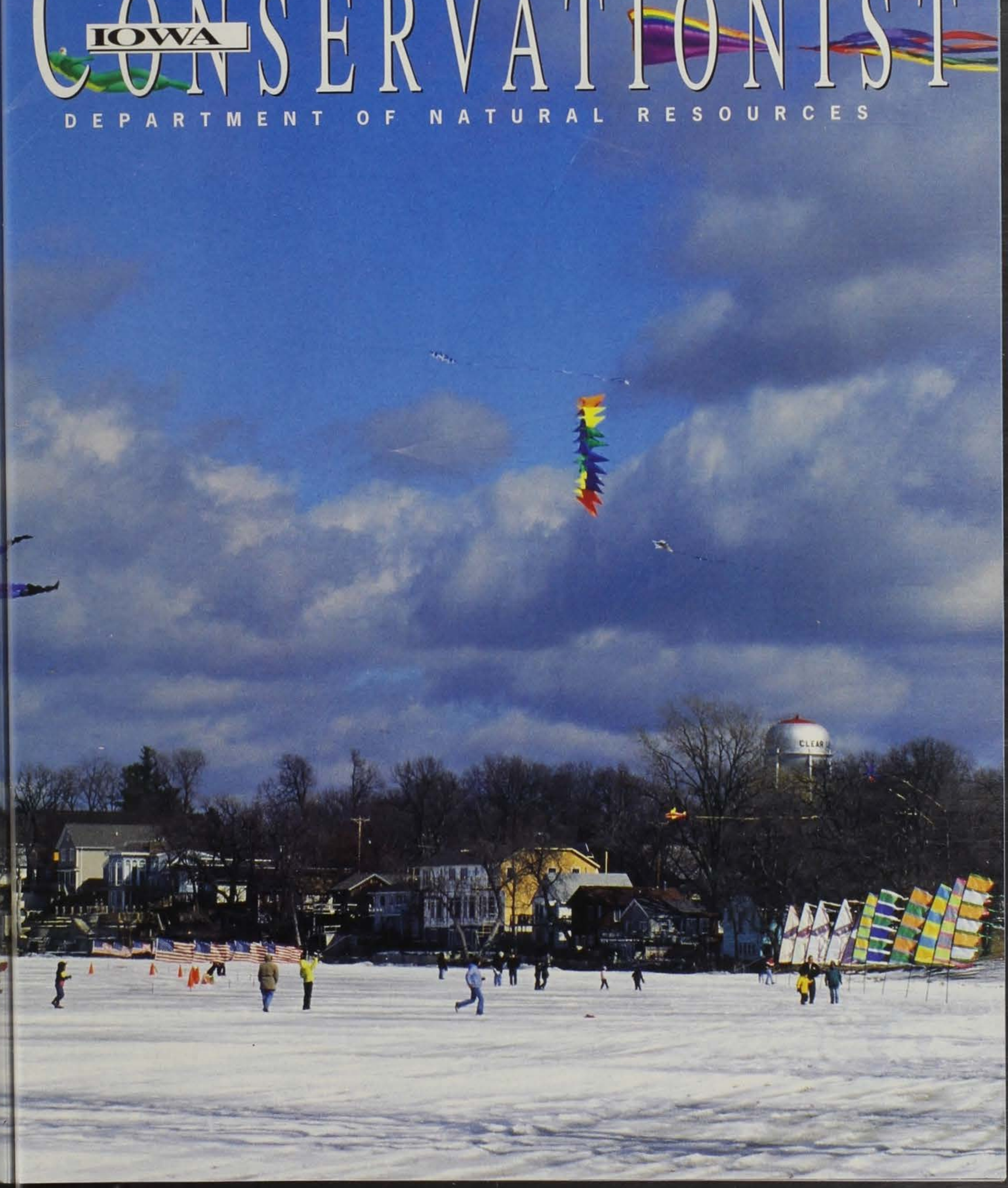
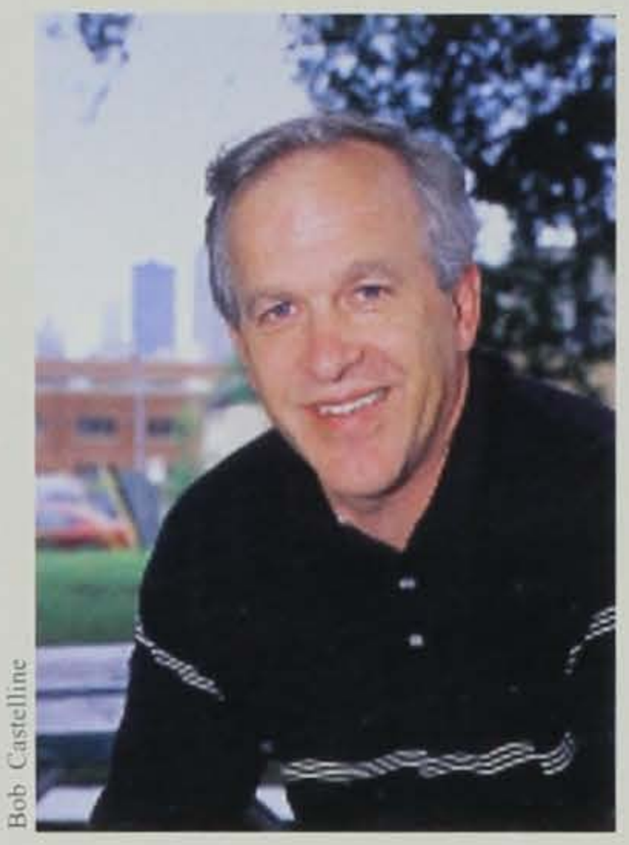
JANUARY/FEBRUARY 2003

IOWA CONSERVATIONIST

DEPARTMENT OF NATURAL RESOURCES



From the Director



Bob Castelline

New Livestock Law... A Promising Challenge

Federal farm bills have always been of particular interest and importance to Iowans. The influx of federal dollars has been vital to maintaining farm income and bolstering the rural economy.

In addition, the new Farm Bill, passed last spring, also represents the most significant commitment to providing resources for conservation on private lands our nation has ever seen.

Analysis of the new Farm Bill indicates Iowa will receive, through price support programs, more payments from the new legislation than any other state. But of equal importance to residents of Iowa is the fact the new Farm Bill also pledges an 80 percent increase in funding for conservation programs, including provisions to develop renewable energy sources.

This state has long been blessed with some of the best farmland in the world, coupled with some of the best farmers in the world. The ability for us to efficiently produce agricultural products can't be questioned and our producers have always been strong participants in conservation provisions of federal farm policy.

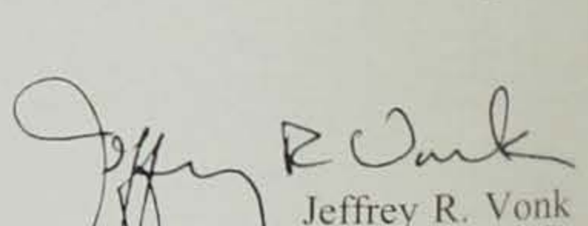
On the conservation side, our farmers lead the nation in the number of buffer strips installed along streams and the number of acres enrolled in the Farmable Wetlands Program. We are sixth in the nation in the amount of land idled for 10 years or more under the Conservation Reserve Program.

Still, Iowa's streams and lakes rank among the most nutrient-rich in the world. Although great strides have been made at controlling erosion, sedimentation is still a major concern for virtually all of our surface waters.

Shifting emphasis of federal farm policy toward conservation on private lands couldn't be more timely for Iowa. We are second only to the state of Kansas in the amount of land used as farmland at 92 percent. There is greater concern about water quality in our state and an increasing awareness that the quality of that water is a direct reflection of how the land around it is treated.

The Department of Natural Resources has increased our ability to partner with agriculture to take advantage of conservation provisions in the Farm Bill. We now have 5 regional private lands biologists, with a staff of 20 wildlife and habitat specialists throughout the state, to provide individualized assistance to property owners in planning conservation efforts. Likewise, we are moving more people into the field offices of our Environmental Services Division to work with Iowa's citizens on not only compliance with laws, but in proactively protecting the environment. We have also greatly increased our Geographic Information System (GIS) capabilities, giving us precision information on where conservation practices are most needed and the ability to do computer modeling to determine which practices will be most effective.

The new Farm Bill has answered the call to not only provide a viable economic safety net for our farmers, but also pay greater attention to stewardship of our natural resources. It is now up to all Iowans to make the best use of the new tools we have been given.



Jeffrey R. Vonk

IOWA CONSERVATIONIST

FRONT COVER: WINTER FUN AT CLEAR LAKE BY LOWELL WASHBURN

Departments

Features

LETTERS

Sarcasm Won't Encourage Dialogue

In response to Rick Olson's letter (Sept/Oct '02) regarding catch-and-release vs. catch-and-eat fishing, I very much agree with Mr. Olson that eating some of the fish you catch both sanctifies the chase and solidifies the fisher's place in the Cycle of Life. I also agree that a strict catch-and-release ethic is tantamount to wildlife harassment for the sake of human pleasure.

However, I was sorry to see Mr. Olson's use of sarcasm and tired cliches, which take the useful and legitimate debate of whether or not fishers should eat fish and reduce it to the age-old and futile bickering between social classes and method preferences.

Olson's letter will not encourage dialogue. Phrases like "...so-called sportsmen who pursue poor little fishies with thousands of dollars' worth of Space Age technology..." will more likely lead some catch-and-release fishers (among others) to dismiss him as a redneck bait fisher who's just sore because a favorite worm-dunking hole was recently designated catch-and-release.

As an elementary school teacher, I am reminded of two things: 1) When helping kids to resolve conflict, I always ask them to avoid sarcasm. It may feel good to let loose a snappy or cutting remark, but it never helps to solve the problem; and 2) With educational theories and practices, the pendulum seems to swing from one extreme to another, when what is needed is a happy medium of both.

In the "release vs. eat" debate, I think what we need is an open, sarcasm-free dialogue; I think what we'll find is that some — if not most — fish should be released to sustain healthy populations, but that it is a good, nature-affirming thing to eat some fish too.

Finally, I think Mr. Olson is absolutely right when he says that there are much greater dangers facing Iowa waters than the legal consumption of fish. Who better to protect and advocate for water quality: A motley array of bickering groups? Or a strong, unified coalition of all fishers?

Zac Wedemeyer
Iowa City

ATV Ads Upset Reader

It is with sadness and disappointment that I write this to the editor. I feel the need to explain my decision not to renew my subscription to the *Conservationist*.

For myself, the *Iowa Conservationist* had always represented a reasoned voice for the environment. The recent acceptance by your publication of advertisements for ATVs has convinced me I was mistaken. Recreational ATV use, as currently practiced, is one of the most serious problems facing natural resource managers in Iowa and elsewhere.

I have regretfully concluded that I can no longer subscribe to your publication while you continue to promote these anti-environmental machines.

Loren Lown
Pleasant Hill

Calendar Is "Garbage"

I am returning my 2003 DNR calendar. I do not know who is responsible for designing and printing but it certainly misses the idea of being a functional calendar. Most people do not put the calendar (on) the living room wall. (They) put it in the den or the kitchen and use it to make reminder notes on days or birthdays, or school reminders or other notations. There is no room to make any of these on the calendar. It is an ugly piece of garbage. Don't you have anyone working there that knows how to make a calendar???

Robert Lawson
Des Moines

Stirring The Pot

I guess I stirred up a few readers when I suggested that my lifetime fishing license should be laminated.

Having obtained my license in 1999, I found to my dismay

that the size of the paper license was 6" X 7," hardly something to be laminated and folded in my billfold.

I would be happy to laminate my own license if it would be issued about the size of a credit card.

Dick Wagner
Burlington

Thanks To The Hunters

As a teenager in the early '70s, I was always eager to venture out into the woods, cornfields and fence lines when the hunting season finally arrived. My favorite hunt was usually squirrel, rabbit and pheasant.

After leaving the Marine Corps in 1980, I lost interest in hunting. Shooting animals does not appeal to me anymore. I guess I had lost the urge and yearning to hunt. I still have my old shotgun, but the birds I now enjoy to hunt are clay pigeons. I can down those birds by the dozens with great pleasure and accuracy. I have not lost "the touch."

Even though I do not hunt for birds or other game does not mean that I'm an animal activist by any means. I thank all the people who gain pleasure from this sport and do not abuse the bagging limits. I thank them for maintaining the population of the stock. Without their assistance, herds of deer and coveys of birds would over-populate. Animal activists should know that disease and starvation would and will take its toll if populations are not controlled. Large predator animals are long gone from the Midwest to (do) this naturally.

Wherever I drive, it seems that "road kills" are on the rise. Deer seem to be on the increase lying dead from a vehicle strikes along with the raccoons. When animal activist(s) have their say and way, in the end all animals suffer needlessly.

At present, I could not picture myself bagging a beautiful deer. But when a relative or friend bags one and offers me a portion of the meat, I cannot say no. They are proud of their bounty and fortunate for me they want to share the benefits.

So in conclusion I personally want to say thanks to the hunters throughout Iowa and the greater United States. Good luck on your next hunting adventure!

Mark J. Steele
Clinton

This letter was edited slightly for length.

— Eds

The *Iowa Conservationist* welcomes letters from readers. Printed letters reflect the opinions of the author. Letters may be edited for length and clarity. Letters can be emailed to alan.foster@dnr.state.ia.us.

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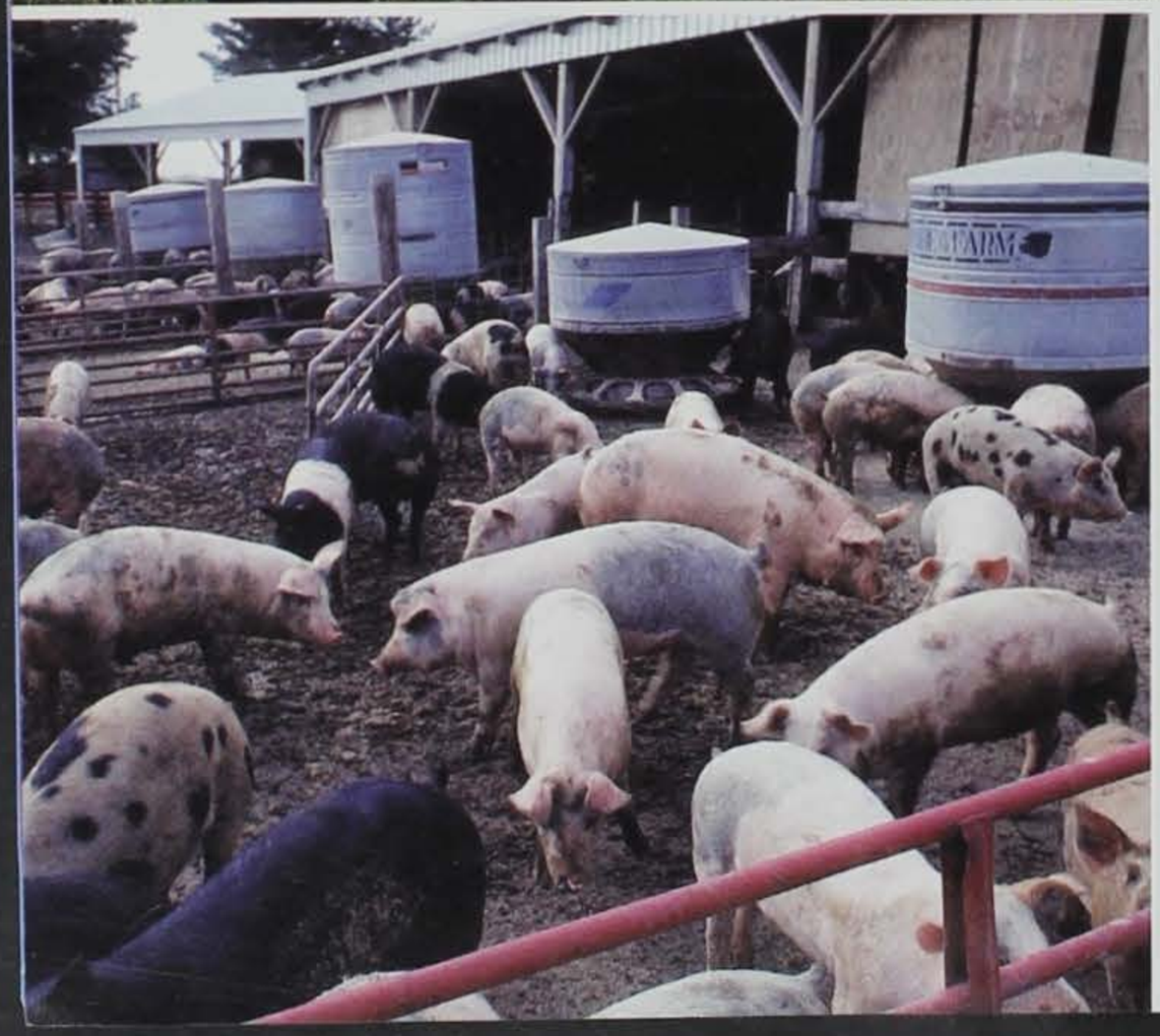

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FARM BILL 2002

What's at Stake for Iowa?

by Ken Herring

On May 13, President Bush signed into law the largest, most far-reaching and expensive conservation measure ever put together for a farm bill. This legislation, technically named the Farm Security and Rural Investment Act of 2002, is best known as the 2002 Farm Bill. The best news for Iowa is that the bill greatly increases conservation spending for several popular conservation programs like the Conservation Reserve Program (CRP) and the Wetland Reserve Program (WRP) and adds funding for brand new programs such as the Grassland Reserve Program (GRP) and the Conservation Security Program (CSP).

The 2002 Farm Bill, symbolizes the collective efforts of many conservation organizations, state and federal conservation agencies, as well as agriculture commodity interest groups, who worked with key legislators in crafting the programs and language included in the legislation. The legislation will earmark billions of dollars annually for conservation purposes. For example, the 2002 CRP payments to Iowa landowners totaled more than $185 million alone.

While the cost of the 2002 Farm Bill flutters the hearts of veteran lawmakers, farmers, conservationists and taxpayers, the bill contains the common thread of addressing the environmental and economic concerns related to agriculture that are on the mind of most Americans. Needless to say, Iowa has an absolutely huge stake in the programs and legislation provided in the 2002 Farm Bill, both in environmental as well as economic terms. While there is both hope and opportunity in the new Farm Bill, there is also an ominous undercurrent of responsibility associated with the enormous cost.

The responsibility to make measurable progress in terms of water quality and other environmental concerns related to agriculture is expected by Congress and an increasingly urban population of taxpayers and conservationists who want results in return for the dollars spent supporting traditional agriculture program funding. This expectation follows a relatively short but interesting venture of Congress to use the "stick" instead of the "carrot" ap-

Roger A. Hill

Through the Wildlife Habitat Incentive Program (WHIP) landowners can receive up to a 75 percent cost share in establishment of native prairie.

Photos at left courtesy of USDA Natural Resources Conservation Service

proach in the 1985 Farm Bill.

In the 1985 Farm Bill, sections of the bill prevented farmers from receiving all types of farm subsidy payments if they converted or damaged wetlands, or plowed and converted grasslands without certain conservation measures. Thus the "stick" approach which denied USDA payments. This approach was not popular with the USDA, farmers or Congress and most certainly resulted in a hasty return to "carrot-type" or voluntary programs outlined in subsequent farm bills — especially the 2002 Farm Bill.

The voluntary programs reward a farmer with payments to complete the conservation measures needed on their land. However, conservationists, taxpayers and government agencies are watching closely the price tag for these programs. Most importantly, everyone agrees there must be measurable progress in real terms of water quality, soil and wildlife conservation as a result of these costs or another approach to conservation may be considered.

Iowans, perhaps better then anyone, are keenly aware of the

Iowa farmers lead the nation in the number of buffer strips installed along streams and the number of acres enrolled in the Farmable Wetlands Program.

Roger A. Hill

environmental concerns related to agriculture. As a state, Iowa has ecologically altered the majority of its 36 million acres of natural ecosystems, replacing prairies with cornfields. In addition, wetlands have been laced with subsurface drainage systems, and forestlands have been converted to pasture or crops. We have added further insult by constructing levees along our rivers and housing developments. Expanding urban areas often replace prairie, woodlands or fill once-vacant flood plains and continue to speed runoff and create downstream flood-related problems.

Iowa has a long list of streams and lakes designated "impaired" by the Iowa DNR and the Federal Environmental Protection Agency (EPA). Each year, several of Iowa's state and county parks temporarily post swimming advisories at their lakes due to water quality problems. And Iowa has been targeted by the EPA as a major contributor to the hypoxia problems in the lower Mississippi River basin, an extremely serious environmental problem affecting the economic interests in the downstream states bordering the Mississippi. Due to agriculture-related problems, many major Iowa cities have had to build and maintain expensive water treatment systems to provide potable water for their citizens.

The Good News

The 2002 Farm Bill provides landowners and conservation agencies with more programs and tools than ever before in the history of any previous farm bill. In addition, the traditional USDA agencies primarily responsible for implementing the programs have never had as many conservation partners willing to help with technical expertise and program delivery. The majority of Iowa landowners care deeply about soil, water and wildlife conservation. Iowa has led the nation in enrolling lands into the CRP and WRP programs. Recently, Iowa again led the nation in enrolling acres into the new Farmable Wetlands Program. Landowners are becoming more accustomed to using the many programs as a virtual "tool kit" of alternatives to addressing conservation problems on the land.

Programs and conservation opportunities provided by the 2002 Farm Bill are many and have specific rules as well as objectives. Making

Roger A. Hill

Program	What land is eligible?	Length of Agreement	What USDA Offers	Producer Obligations
Conservation Reserve Program (CRP)	Highly erodible cropland that has been planted 4 of the 6 most recent years. Marginal pastureland.	10-15 years	Annual Payments 50% cost share	Develop and follow a plan for the conversion of cropland to a less intensive use. Also, assist with the cost, establishment, and maintenance of conservation practices.
Wetland Reserve Program (WRP)	Most private wetlands converted to agricultural use prior to 1985. Wetland must be restorable and suitable for wildlife benefits.	10 to 30 years; permanent	Easement Up to 100% cost share	Develop and follow a plan for the restoration and maintenance of the wetland. If necessary, assist with the cost of restoration.
Grassland Reserve Program (GRP)	Private grassland, shrubland and land containing forbs or land the historically contained those features.	10,15,20 or 30 years; permanent	Annual payments Easements Up to 90% cost share	Develop and comply with a plan of the easement or restoration agreement; assist with the remaining installation costs.
Wildlife Habitat Incentives Program (WHIP)	All private land, unless it is currently enrolled in CRP, WRP or a similar program.	5-15 years	Up to 75% cost share	Prepare and follow a wildlife habitat development plan; assist with installation costs.
Environmental Quality Incentives Program (EQIP)	All private land in agricultural production; includes cropland, grassland, pastureland and non-industrial private forestland.	1-10 years	Annual payments Up to 75% cost share	Develop and follow an EQIP plan that describes the conservation and environmental purposes to be achieved; assist with installation costs.
Conservation Security Program (CSP)	All private agricultural land and forested land that is an incidental part of an agricultural operation.	5-10 years	Annual payments	A conservation security plan is required to install and /or maintain conservation practices on working lands.
Forest Land Enhancement Program (FLEP)	All non-industrial private forestlands are eligible for financial, technical and educational assistance.	10 years or more	Up to 75% cost share	Develop and implement a management plan; assist with the remaining installation costs.
Farm and Ranch Lands Protection Program (FRPP)	Private land that contains prime farmland and other unique resources and is subject to a pending easement from a state, local or government entity.	Permanent	Easements	Continue to use the land for agricultural purposes. Develop a conservation plan and comply with the terms of the easement.

Program Notes: (CRP) Includes a regular sign-up, continuous sign-up, the Conservation Reserve Enhancement Program (CREP) and the Farmable Wetlands Program (FWP). Incentive payments and additional cost-share is available for special practices, and maintenance fee of $5/acre per year is also provided. To qualify for FWP, land must have been cropped or considered cropped in at least 3 of the past 10 years; must be wetlands, farmed wetlands or prior converted cropland, 5 acres or less. (GRP) A minimum of 40 contiguous acres is required for enrollment. (FLEP Financial assistance is available on up to 1,000 acres, or 5,000 acres with a waiver.
All programs are subject to final USDA regulations.

sense of these many programs and their specific details is a daunting task for most landowners. Getting the most from the programs will take time and the consultation with several conservation agencies. At left is a resource intended to assist landowners with understanding the programs provided in the new farm bill.

Getting help deciding which program is right for you and answering your questions is the responsibility of the USDA agencies. The two agencies responsible for this task are the Farm Service Agency and the Natural Resources Conservation Service. It is most helpful to begin your search for your conservation needs at the nearest USDA office. Usually, you will find specific informational brochures that get into more detailed explanations of the particular programs. If you have a large or complex farm operation you will want to request a comprehensive farm plan that considers all the conservation needs of your farm. If you are most interested in wildlife, fisheries or forestry conservation planning you will likely be referred to a DNR wildlife biologist or district forester.

The DNR provides professional staff throughout Iowa to work specifically with Iowa landowners to link them to conservation programs and provide technical expertise related to fish, forest and wildlife management on private lands. Please feel free to contact any of the staff on the following pages for their assistance.

Samples of Conservation Needs and the Practices/Programs to Help

Conserving soil and water resources
To improve soil and water quality, consider these or similar practices:
nutrient management
pest management
cover crops
efficient water management
grassed conservation buffers
riparian buffers
Look at these USDA programs: CRP, EQIP, CSP

Managing manure
To prevent nutrient loss and protect air, soil, water, fish and wildlife resources, consider these or similar practices:
waste storage structures and lagoons
nutrient management
compost facilities
odor control
manure spreading
Look at these USDA programs: EQIP

Establishing wildlife habitat
To enhance, restore and manage fish and wildlife populations on your land, consider these or similar practices:
rotational grazing
wetland restoration
grassland restoration
conservation buffers
stream habitat improvement
Look at these USDA programs: WHIP, CRP, WRP, GRP, EQIP, CSP

Photos above courtesy of USDA Natural Resources Conservation Service

Managing forest lands
To restore and protect forest resources and improve fish and wildlife habitat, consider these or similar practices:
tree planting
forest stand improvement, thinning
prescribed burning
controlling invasive plants
Look at these USDA programs: FLEP, WHIP, CRP, EQIP, Forest Stewardship Program, Forest Legacy Program

Roger A. Hill

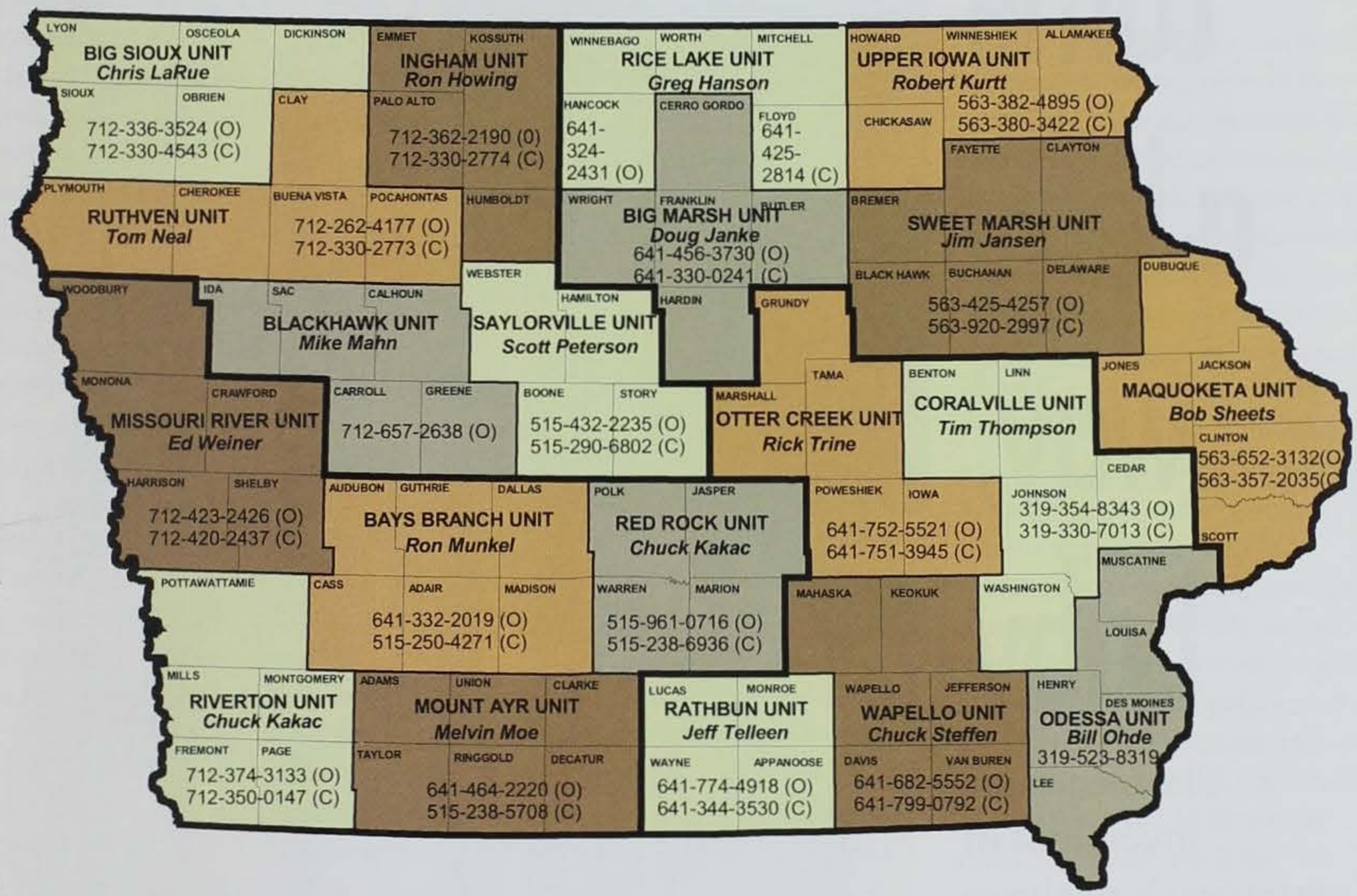
Never in the history of private lands conservation in Iowa, has there been a better opportunity for landowners to receive the technical and financial opportunities to put conservation measures on the ground. Several new programs are not yet in operation, but will likely be finalized in 2003. Traditionally, new programs are opportunities for the more innovative and most conservation-minded landowners. Funding is still expected to be a factor that will limit projects to those that best conform to program guidelines and goals.

Landowners should keep in mind that the 2002 Farm Bill provides a "window" of opportunity (2002-2006) to enroll in the conservation programs provided. The future of the 2002 Farm Bill provisions will undoubtedly rest largely upon the acceptance by landowners willing to enroll and the ability of the programs to provide measurable results — to the landowner, the taxpayers and the citizens of Iowa and the U.S. Clearly, much is at stake.

Informational tables on pages 10 and 11 were taken from the Wildlife Management Institute's publication *Conservation Practices and Programs for Your Farm.*

Ken Herring is the wildlife management supervisor for the department in Des Moines.

WHO TO CONTACT FOR ASSISTANCE



Regional Private Lands Biologists

For assistance with programs provided by the 2002 Farm Bill, contact your local NRCS office, your local wildlife management biologists above, or one of the five regional private lands biologists.

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They've come a long way, baby

The electronic inventions of yesteryear's geniuses have blossomed — into a massive waste management issue.

by Bob Castelline

What if Alexander Graham Bell had looked into a crystal ball back in 1876?

My, how their children have grown.

Thomas Edison, Alexander Graham Bell, Guglielmo Marconi and Philo Farnsworth would have done handsprings if they'd known what their early electronic brainchildren would become. It seems almost unfathomable that their inventions — the phonograph, telephone, radio and television — are the great-grandparents of today's flashy Dolby THX sound systems, disposable cell phones, XM satellite radio systems and gas plasma television sets. Most people barely recognize the connection.

And talk about commercial success. Electronics have become a $550 billion-a-year industry, according to the Consumer Electronics Association (CEA), and that number figures to grow significantly over the next decade. At the end of 2001, about one billion cell phones were in use worldwide, with more than 128 million cell phone subscribers in the United States alone. About twice as many people worldwide have access to television as to cell phones, and more than half of America's 106 million households own at least one computer, according to the 2000 U.S. Census.

Certainly, the inventions of Edison, Bell, Marconi and Farnsworth, among others, have evolved to make life easier and more convenient for consumers. But such convenience has come at a price, especially to the environment. As consumers buy electronics in exponentially increasing numbers, they throw away their old gadgets in staggering amounts. A DNR study shows that about 274,000 computers were made obsolete during 2001 in Iowa alone, enough to fill the dome of the state capitol building 10 times.

Computers, however, aren't the only components of electronics waste (e-waste). Everything from computers to televisions to radios to hair dryers to cell phones ends up as e-waste. "Just look around your own household," said Merry Rankin, a DNR environmental specialist who is working to find solutions to the growing e-waste problem. "It's overwhelmingly apparent how dependent on electronics we've become."

Bob Castelline

Iowans discarded 274,000 computers in 2001, enough to fill the state capitol dome 10 times.

Iowa, as well as many other states, have become concerned about e-waste. That concern is prompted by not only the sheer volume of e-waste being generated, but also the toxic constituents that comprise it. Elements such as lead, cadmium and mercury are expensive to manage, and can contaminate groundwater and pose other environmental and health risks if discarded improperly.

The traditional method of managing electronics waste has been to let municipal government handle it. Recently, however, the emphasis has swung toward shared responsibility between government, consumers, manufacturers and retailers. Regulations implemented in Europe and Asia require electronics producers to take back and recycle their equipment at end of life. Those changes have fueled discussions as to whether such regulations should be imposed in the United States.

Even the recycling of electronics components has its problems, however. Computers are not designed for ease of recycling, so their dismantling is expensive and labor intensive. And handling toxic components is risky to workers. Many recyclers, faced with few economic options, have taken to exporting discarded computers and other electronics to countries in the Far East, where labor is cheap and environmental laws are less restrictive and not well-enforced (see sidebar on pages 16 and 17).

The Iowa Legislature has mandated that the DNR study the problem and make recommendations for a long-term plan for proper disposal of e-waste in Iowa. Developing this plan has become a priority for the DNR's Energy and Waste Management Bureau for fiscal year 2003.

How did we get here?

About 25 years ago, technology held a vastly different place in the world. Back then, a "mouse" was an unwelcome rodent. "High-definition TV" was a good picture on Channel 5. A "keyboard" was something attached to a piano. The only things "downloaded" were pillows and ski jackets. And "wireless communication?" That was a CB radio, good buddy.

But 1977 marked the dawn of a new day in electronics, as the world's

inventors unleashed a torrent of new technology. RCA introduced the first commercially available VHS video cassette recorder, complete with a four-hour recording time and a price tag of $1,000. Atari unveiled its Video Computer System, better known as the Atari 2600, and ushered in the era of color video games. And both RCA and Phillips announced that video disc systems would be released in 1977. The 12-inch laser disc systems weren't commercially available until 1979 and were a commercial disaster,

Merry Rankin

Apple, Tandy and Commodore introduced the home PC back in 1977. Twenty-five years later, 130 million computers were sold worldwide.

but 25 years later the idea has taken firm hold in the form of DVD.

Perhaps the most significant release of 1977, however, came from three separate companies producing the same basic product. Apple, Commodore and Tandy — with the Apple II, the PET and the TRS-80, respectively — made home personal computers available commercially for the first time.

Today, home PCs are a common part of everyday life in America, where more computers are purchased each year than in any other nation (about 130 million computers were sold worldwide in 2002). According to a DNR-commissioned study by Wuf Technologies of Concord, N.H., about half of Iowa's 1.5 million employees use a computer every day at work. Iowa businesses purchased nearly

Recycling is a good option — but only if it's done right

Some computer manufacturers offer "take-back" programs, allowing you to send your computer back to the company for recycling when its useful life is over. These programs will cost you anywhere from $13 to $40, depending upon the component, but they do provide an opportunity to "do the right thing" from an environmental standpoint.

Or do they?

Recent research suggests that 50 to 80 percent of the United States' obsolete computers sent for recycling are shipped instead to China and other Asian countries. There, workers in small village operations are paid about $1.50 per day to disassemble the toxic components by hand, polluting air, ground, water — and endangering themselves — along the way.

These findings are documented in a 54-page report titled "Exporting Harm: The High-Tech Trashing of Asia," written jointly by the Seattle-based Basel Action Network and the Silicon Valley Toxics Coalition (SVTC) of San Jose, Calif. Both of these national non-profit organizations engage in research, advocacy and organizing associated with environmental and human health problems caused by the rapid growth of the high-tech electronics industry.

The toxic impact of computer components comes alive in "Exporting Harm." For example, the report describes processes where workers remove precious metals from circuit boards through a crude process of stripping them with acid. The operation routinely takes place near riverbanks, resulting in acidic soil that has been tested at pH levels of zero (the most acidic possible) and water samples showing levels of lead, zinc and chromium at 190 times the standards set for drinking water by the World Health Organization.

In other villages, wires are ignited in order to burn the polyvinylchloride (PVC) insulation away from the valuable copper, sending toxic smoke into the air and leaving buildings and grounds covered with heavy, black soot. Solder is removed from printed circuit boards using crude wok grills, exposing workers to potentially harmful fumes. Other low-tech approaches to computer demanufacturing produce similar hazardous conditions.

"Exporting Harm" has begun to influence the industry. Merry Rankin,

Photo courtesy of Basel Action Network

In some Asian villages, wires are ignited to extract valuable copper from PVC insulation. Here, a child in the Chinese village of Guiyu eats an apple in his "backyard," a landscape of ash and potentially toxic residue.

a DNR environmental specialist, said that companies and recyclers have become more diligent in tracking the processing of their electronics after collection, with many using contracts that mandate a "paper trail."

The report also has impacted manufacturers. During a Nov. 25 hearing of the California Environmental Protection Agency in Sacramento, Hewlett-Packard (HP) became the first large-scale computer manufacturer to publicly embrace manufacturer responsibility in the effort to manage electronics waste. This represented a reversal for the world's largest manufacturer of computers. Along with other manufacturers, HP had lobbied against a bill passed by the California legislature and later vetoed by Gov. Gray Davis that would have made it the first state to enact legislation requiring mandatory manufacturer involvement in electronics recycling.

The California legislature plans to take up the issue again in 2003, thanks in part to the findings in "Exporting Harm" and a series of articles in the San Jose Mercury News. HP's change in position has been significant. "I am more convinced than ever that we will get a good bill passed in California next year," said Ted Smith, SVTC founder and executive director. "There are many issues yet to address, but I believe this was a turning point."

HP declined comment to the *Iowa Conservationist* on the issue. But the company said in a statement that it is "not opposed to reasonable legislation on product recycling that can be applied fairly and equitably to all companies and that is structured in a reasonable and efficient manner." Renee St. Denis, product recycling solutions manager at HP, said during the Nov. 25 meeting that California is likely to set the agenda for the rest of the country on this issue and that it was important for HP to have a say in the solution. The Electronics Industry Alliance, of which HP is a member, has stated it prefers federal legislation and has lobbied successfully against state-by-state resolutions.

The 15 countries of the European Union have already enacted laws mandating manufacturer involvement in electronics recycling and also have outlawed shipping discarded electronics to other countries. As a result, HP and other manufacturers, which sell to European countries as well as the United States, have begun to develop products that are more easily recycled, setting the stage for a national program in the United States.

"We're seeing some movement in the right direction," Smith said. "State and local governments have begun to realize that electronics companies must assume high levels of producer responsibility to solve the e-waste problem at its source and not to export it to foreign shores."

—BC

300,000 computers in 2002, while Iowa residents purchased about 150,000. Soon, Iowans will discard as many computers as they buy.

Computers aren't the only electronic devices of concern. Americans purchased 40 million television sets in 1998. And cell phone subscriptions, which have increased by nearly 600 percent worldwide since 1994, will reach 1.2 billion by 2005.

DNR file photo

Recycling is a great option for e-waste management, but there are barriers. Iowa has only four computer recyclers, and recycling costs for electronics are 20 times higher than landfill tipping fees.

The expansion of e-waste

By volume, computer equipment comprises the largest portion of the e-waste stream. Computers, which used to last 4-6 years before becoming outdated, now are replaced, on the average, after just two years. Estimates as to how many outdated computers will be dumped is complicated because many users simply stash them in basements or attics. But industry experts believe that by 2004, Americans will dispose of as many as 315 million computers.

Of the many environmental concerns associated with discarded electronics, the greatest is associated with the toxins found in computer monitors and television sets. A typical computer monitor or television contains 4 to 8 pounds of lead, which is added to the glass to absorb radiation. Dumping 315 million computers into landfills would amount to the introduction of 1.2 billion pounds of lead, 2 million pounds of cadmium, and 400,000 pounds of mercury into waste streams (see chart). In 2001, 3.3 million pounds of lead came from Iowa's e-waste, easily the state's largest source of lead.

E-waste from computers is growing at a faster rate each year. Once upon a time, consumers bought electronic products with the expectation they would last a decade or more. Now the rapid evolution of technology makes computers obsolete in a short period of time, and consumers rarely take broken electronics to repair shops because replacement is usually easier and cheaper. "Effectively, electronics have become disposable," Rankin said.

Televisions may someday become as big a problem as computers, thanks mainly to the advent of digital television (DTV). This technology gives broadcasters the ability to offer high-definition television (HDTV), a system that offers CD-quality digital surround sound and pictures that are more than five times as sharp as today's televisions. DTV also allows enhanced or interactive television, permitting huge quantities of text, sound, images and computer programs to be downloaded along with broadcasts.

But DTV carries some heavy baggage: It will someday make

What's in there?

A few of the toxic elements found in computers are listed below

Lead
The negative effects of lead are well established. Lead is used in computer monitors (3 to 8 pounds per monitor) and in solder.

Cadmium
Cadmium compounds are toxic and accumulate in the human body, particularly the kidneys. Cadmium is used in semiconductor chips, infared detectors and plastics.

Mercury
Mercury can cause damage to many organs, including the brain and kidneys. When mercury spreads into water sources, it concentrates through the food chain, particularly fish. Mercury has a number of uses in computer equipment.

Hexavalent chromium
Used as a corrosion inhibitor and as a decorative hardener for steel housings. It easily passes through cell membranes, producing various toxic effects in contaminated cells.

Source: Silicon Valley Toxics Coalition

standard televisions obsolete. The Federal Communications Commission has mandated that all television stations begin broadcasting digital signals by May 2003, with traditional analog signals being eliminated beginning in January 2006. That means traditional television tuners will no longer work.

Viewers will be able to purchase or lease digital set-top units, similar to those offered by cable and satellite providers, that allow older televisions to receive DTV signals. But market statistics show that consumers likely will opt for digital sets. CEA estimates that Americans bought twice as many DTV units in 2002 as compared to 2001, and that number figures to grow to 10.5 million units (a 500 percent increase) by 2006, the first year analog signals are taken out of service.

Cellular telephones are a problem, as well. INFORM, a New York-based, non-profit, environmental research organization, estimates that 130 million cell phones will be retired each year in the United States by 2005, while another 500 million will be stored away in drawers, closets and attics.

Bette Fishbein, a senior fellow with INFORM, says that cell phones, pack a big environmental punch in spite of their size. "Cell phones are a lot smaller than televisions or computers, but we throw them away after a much shorter period of time," she said. For example, some companies offer free phones and rebates when users renew their accounts. US Cellular offers $100 toward a new phone and waives the $25 activation fee for any plan that costs at least $35 per month. "You get millions of cell phones being discarded that are in good working order, mostly because of marketing factors."

On the horizon is an even more problematic cousin to the cell phone: the "throwaway phone." The idea is simple. Consumers will be able to purchase these mobile phones for anywhere from $9 to $40. They come programmed for 30-60 minutes of talk time, depending upon the model. After the minutes are used up, the phone is thrown away.

Back in the loop

In general, to recycle a product means to disassemble it and process it back into raw materials that are used to make new products. Recycling differs from refurbishing and reusing, which involves cleaning, re-programming or repairing discarded components, then giving them away or selling them at low cost.

Recycling is a great alternative to landfilling discarded electronics. Producing electronic components from recycled materials uses only 25 percent of the raw materials and 33 percent of the energy needed to produce the same components from virgin materials. Refurbishment and reuse provides schools, day care centers, churches and other needy organizations with valuable computer products.

But each method has problems. For example, in order to recycle a

product, it first has to be separated into its basic component parts, namely metal and plastic. That can prove to be difficult with electronics because most manufacturers don't design their products with recycling in mind.

As a result, electronic components, especially televisions and computer monitors, are difficult — and expensive — to recycle. According to the Wuf study, the cost of recycling used electronic equipment can be as much as $600 per ton, compared to a typical Iowa landfill tipping fee of $33 per ton. In addition, transportation costs are high because of the long distances to electronics recycling centers. Because of this expense, many recyclers have become little more than brokers for sending the waste overseas (see the related article on pages 16 and 17).

With refurbishment and reuse, the problem lies with public awareness. Barb Klawiter is director of the Rockwell Educational Access to Computer Technology (REACT) Center in Hiawatha, Iowa, an organization funded by Rockwell-Collins that distributes working computers to needy organizations. Klawiter says there is plenty of demand for used computers, but nowhere near enough supply. She said people just don't know what to do with their electronics.

"Our biggest barrier is simply getting enough equipment to meet all of our requests," Klawiter said. "We've got our procedure down to a science. We can turn a computer around in 24 hours to have it ready for reuse, and we hand out 400 computers a month. But we've got a lot of folks waiting."

Merry Rankin

Barb Klawiter operates the REACT Center in Hiawatha. She says the biggest problem for her organization is not having enough computers to give to needy groups.

Solving the problem

The problems with electronics waste — a huge volume of discarded components and concerns with toxic elements — are pretty clear. The solutions are, at best, a blur.

A legislative mandate that requires a recommended strategy for dealing with e-waste by January 2004 has prompted the DNR to study the problem for the past two years. In 2001, the DNR commissioned Wuf Technologies LLC of Concord, N.H., to conduct a study characterizing Iowa's electronics waste. This study gave the DNR answers to some basic questions that provided baseline data from which to develop potential solutions (see chart).

As expected, the study shows that computers and televisions are the waste streams of greatest importance. The sector of the population that requires the most concern, however, might surprise you. "We found that individual consumers and small businesses need the most attention, even though they discard fewer computers than large businesses," Rankin said. "They have poor access to recycling opportunities compared to large businesses, and they're less informed, in general."

The study also outlined some options for improving electronics recycling, one of which included the establishment and funding of pilot programs to collect and recycle electronics in order to evaluate cost, benefits and impact. Pilot projects were held in the spring of 2002 in

Solutions:

What to do about e-waste

FUNDING METHODS

Advance disposal fees: Consumers pay a fee at purchase, which works a little like Iowa's Bottle Bill. The fee goes toward paying for management of e-waste.

Sales tax: Would work a lot like advance disposal fees. Sales tax revenue collected would go toward e-waste management.

COLLECTION METHODS

Local cleanup days: Could be held in local communities once or twice per year.

Local drop-off centers: Convenient for consumers, but many communities don't have them.

Retailer return: Consumers would return electronics to retail centers.

Bob Castelline

Volunteers in Sioux City unload a television set May 11 during the DNR's electronics recycling collection pilot. About 10 tons of e-waste were collected there and at another pilot project held in Centerville.

Sioux City and Centerville, with more than 10 tons of e-waste collected.

While pilot collection projects can make a dent in the management of e-waste, the DNR has also been working on a more comprehensive solution. Rankin has represented the DNR at meetings of the National Electronics Product Stewardship Initiative (NEPSI), a consortium of electronics manufacturers, government representatives, recyclers, retailers and other interested groups from more than 20 states. NEPSI's goal is to establish a joint national plan for managing used electronics.

Scott Cassel, director of the University of Massachusetts' Product Stewardship Institute, said the key is in building financial incentives for manufacturers to implement design changes. "If manufacturers have a financial responsibility in the end-of-life management of electronics, they will design products that are more easily recycled," Cassel said.

Under the current system, manufacturers charge customers for turning in their components for recycling. But NEPSI announced earlier in 2002 that it had agreed in principle to the idea of a front-end financing system for e-waste management, meaning the cost of recycling is funded at the time of purchase. This could result in a slightly higher purchase price for electronics. While that may seem like an additional cost to consumers, Fishbein said that's simply not the case.

"It's shifting cost from the taxpaying public to the consumer," said Fishbein, who also participates in the NEPSI dialogue. "Right now, municipalities are responsible for managing e-waste, which means taxpayer dollars are being spent on electronics recycling instead of police protection, fire protection and other necessities."

Ted Smith, executive director of the Silicon Valley Toxics Coalition and another NEPSI member, said that a signed national document was NEPSI's first goal. Now, he says, it appears legislation will be necessary.

"The rhetoric has been for voluntary agreement, but it just wouldn't work," Smith said. "If one electronics company agrees and another doesn't, it puts the first company at a real competitive disadvantage. We need legislation, with rules that would be applied fairly across the board. Manufacturers need incentive to design their products to be less toxic."

In the meantime, Iowans are faced with the question of what to do with their e-waste. Here's a list of what you can do.

Think e-waste when you buy

Some computer retailers allow you to return your computer to them after a specified amount of time. Others allow you to lease a computer and return it at the end of the lease period. When you buy a computer, look for retailers who feature take-back options.

Donate to a good cause

A computer that is obsolete to you may have a great value to someone else. Consider donating your used computer to a charitable organization or needy family.

Take it to a computer recycler

There are recyclers who will take your used electronics and use the parts in other applications. Call the DNR or visit their web site for a complete list of computer recyclers.

Bob Castelline is a waste management information specialist for the department in Des Moines.

What Are You Doing About *YOUR* Deer?

by Willie Suchy

A sleek doe steps quietly out from the forest's edge. She turns her head slightly to the left and then right as she cautiously surveys the opening ahead. After checking the breeze and waiting a few seconds to make sure all is well, she heads directly to where the dark, succulent vegetation grows. She nibbles quickly as she works her way along the edge picking out choice plants as she goes.

The sudden sound of footsteps startles her, and she bolts back toward the forest. She is just to the edge when the silence is shattered by a thundering BANG!

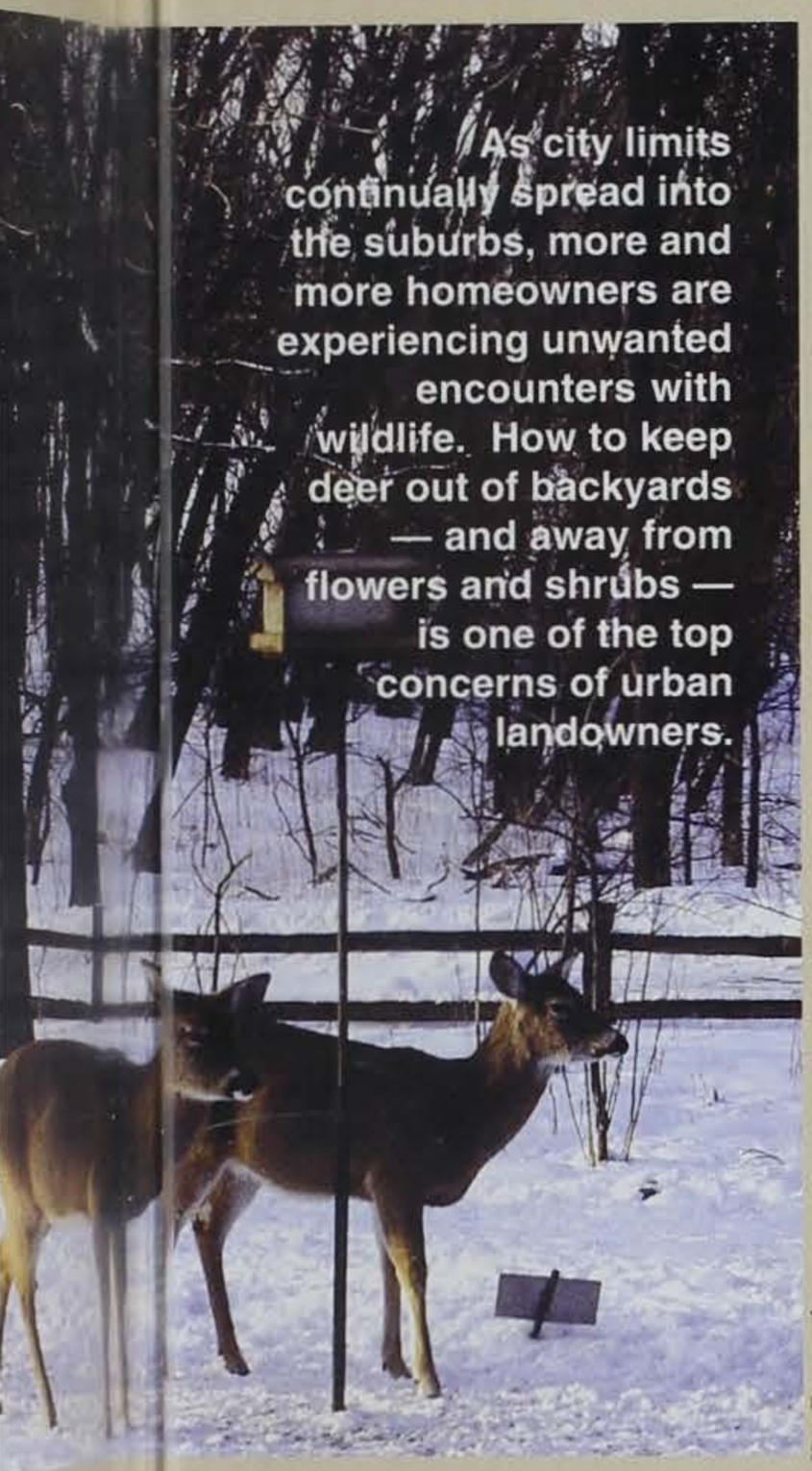
No, the bang wasn't a gunshot, it was the back door slamming shut behind an irate gardener who had stormed out to rescue her prize hostas upon which the doe had been feeding. A quick inventory of the damaged flowers didn't help matters. Her anger grew with each step as she headed back to the house to make the call. Her fingers pounded out the numbers on the telephone. When she heard the voice answer on the other end, she nearly shouted, "What are you going to do about ***your*** deer? They're ruining my garden!"

The scenario, in one form or another, is being played out more and more frequently in and around Iowa cities and towns. The scene raises questions, such as "Why is this happening and where did the deer come from?" and the more difficult, "what can we do about it?"

To answer these questions, we need to first take a look at the life style of deer, including their needs and behavior. We also can look at the results of two urban deer studies in Black Hawk and Polk counties, where more than 100 deer were tagged with radio collars and tracked by DNR staff. The information gained gives biologists a better understanding of how deer use these areas.

Urban Deer Ecology

Whitetails are creatures of the forest edge. They can use a vast array of plants for food, from willow twigs



As city limits continually spread into the suburbs, more and more homeowners are experiencing unwanted encounters with wildlife. How to keep deer out of backyards — and away from flowers and shrubs — is one of the top concerns of urban landowners.

Ken Formanek

and sedges to clover, grass and even red cedar. They typically travel near the timber's edge and selectively browse upon the most palatable food available. Since deer prefer forested edges, many cities and towns have at least some areas that provide ideal deer habitat. Greenbelts along rivers, parks and other natural settings all provide perfect areas for deer to live and prosper. These areas are often prime candidates for suburban expansion as well, with acreages and wooded lots filling in the countryside.

Adult does are the focal point of the social organization of a group of deer. A matriarchal doe and her fawns, and sometimes her past year's fawns and their fawns, will stay together in an area that provides adequate food and cover. Since deer in Iowa typically produce one fawn their first year and two thereafter, one doe can potentially produce 10 offspring in as little as five years. Her offspring can produce another 20 to 30 deer during that time as well. Although some of these "relatives" will move to new areas, DNR studies indicate about 70 percent will stay near their "birth area." When this happens in a small area, deer numbers can grow quickly.

In these urban areas, most deer survive from one year to the next. Historically, the major natural predators of deer in Iowa were wolves, bears and mountain lions. Since these species have for the most part been eliminated from the landscape, deer have a high probability of surviving from one year to the next. Research conducted in rural Iowa shows less than 10 percent of the adult deer die each year, if losses due to hunting are ignored. The urban studies indicated mortality was a little higher, with approximately 10 to 15 percent of the collared deer dying each year. The higher mortality was due to increased road kills. Unfortunately, it appears Chevrolets, Dodges and Fords have partially replaced the wolves and the bears. Fawn mortality rates were a little higher than older animals mainly because they moved around more in search of their own territory.

Even with these somewhat higher mortality rates, deer populations in a typical urban area have the potential to double in about three to four years because of the high productivity. Computer modeling suggests with the high productivity of deer in Iowa, a 30 percent mortality rate is needed to keep the population from growing.

What can we do?

Controlling deer numbers in Iowa's rural areas has traditionally been accomplished through hunting. However, as cities and the surrounding areas change from a rural-dominated landscape to a suburban setting, hunting activity is greatly restricted. These restrictions can come in the form of city ordinances, rezoning or simply intolerance of landowners to allow hunting close to their residences.

When hunting is restricted, the potential exists for a rapid growth in deer numbers. Finding a solution for overabundant deer in these settings is a much greater challenge, and even more controversial.

Faced with growing numbers of deer, homeowners and other members of the community ask for recommendations on what to do. Sometimes fencing and the creative use of repellents can keep the damage at tolerable levels. Sometimes, selecting plants that are less attractive to deer may be the answer. However, since deer can't read the list of plants they aren't

supposed to eat, they may still nibble on these plants in the right (or maybe wrong) circumstances.

The number of deer/vehicle accidents is also a concern in urban areas. Warning signs or reflectors can be installed to try to reduce deer/vehicle collisions. Unless something more is done, however, in most cases deer numbers will continue to increase, as will the severity of the problems. When this happens, a more involved management plan is needed, one that is acceptable to as many people in the community as possible.

Because the plan will now affect the community on a larger scale, it is imperative to involve community members in its development. The communities of Cedar Falls and Waterloo in Black Hawk County were the first in Iowa to formally use this process to address their deer problem. In 1991, the Black Hawk County Deer Task Force was formed to gather information, evaluate options and recommend a control program. The task force was coordinated by the Black Hawk County Conservation Board. The task force included members of local neighborhood, conservation and animal welfare organizations. Technical assistance was provided by the DNR.

The task force is important to look at because, as the first in the state, it laid valuable groundwork many other communities have used since. It's also been in place the longest, providing the best opportunity to see whether the plan has worked.

Black Hawk County

One of the first questions the task force had to answer was how many deer were in the area. Aerial surveys were initiated beginning in January 1992, after a fresh snowfall. (Research has shown most of the deer in an area can be counted under these conditions.) The first year, 50 deer were counted in a 2.5 square-mile survey area in George Wyth State Park and Hartman Nature Reserve area (see figure 1). By 1994 the counts had nearly doubled to 95 deer, or roughly 40 deer per square mile. Research has shown densities above 15 to 20 deer per square mile can have negative impacts on the forest vegetation. After only one year, exclosures constructed on the Hartman Reserve also confirmed deer were drastically reducing the number of seedlings there.

With that information, the task force recommended deer numbers should be kept below 30 per square mile. After reviewing several alternatives to reduce deer numbers, including birth control, trapping and relocating, trapping and killing, controlled hunts and sharpshooters, the task force recommended a controlled bow

Roger A. Hill

Hunting has traditionally been the most effective way to control deer populations. But in areas where hunting is restricted or unavailable, deer numbers continue to rise.

Figure 1. A comparison of the aerial deer counts prior to and after the controlled hunts were initiated. The projected numbers are based upon a 35 percent rate of increase that was observed before the hunt began.

hunt in the fall.

Controlled hunts differ from regular hunts in that a hunter has to meet special requirements to be eligible to participate. Requirements and restrictions may vary depending on the hunt location.

In the Black Hawk County special hunt, the task force recommended limiting the number of hunters permitted on the area at any given time. Hunters would also have to complete the International Bow Hunter Education course, pass a proficiency test and attend an informational meeting explaining special procedures, hours and boundaries. Hunters would be limited to shooting from a stand; no stalking was allowed. The stand would not have to be elevated but had to be at least 25 yards off designated trails and 200 yards from occupied buildings or houses, unless the hunter obtained written permission from the homeowner. All bows would have to be cased when walking to and from stands. Hunters would be asked to keep shots to a 20-yard maximum to reduce wounding and to take adult does if possible instead of young does or button bucks.

After a long public debate, the Waterloo city council approved a controlled bow hunt for 1994. The hunt didn't begin until late November, but in the 24 days remaining in the season, 33 hunters killed 15 does and four buck fawns. Aerial counts dropped to 80 in January 1995. The hunt was expanded in 1995 and 30 deer were killed. However aerial counts jumped to 120 in January 1996. Despite slight increases in the number of deer killed in each of the next two years, aerial counts remained steady. Between 100 and 130 deer were observed in the counts.

In 1998 the task force asked for "incentive" licenses that would allow a hunter to kill an antlered deer in the special hunt area. The 10 licenses were issued through a lottery of applicants who had harvested a doe the previous year. Hunters who received an incentive license could harvest a buck only after taking a doe during the current season. The incentive licenses came to be known as the "earn a buck" program. That fall the kill jumped to 91 deer. Since the "earn a buck" program was initiated, aerial counts have been kept below the 30-deer-per-square-mile target.

A Success?

The Black Hawk County controlled hunt didn't come without some opposition. When it was proposed, many believed a bow hunt could not control deer numbers. Their main contention was the bow was just too inefficient. Others felt hunters would be too intrusive, that it wouldn't be safe to use the parks and wounded deer would be running everywhere. None of these concerns has proven true. The hunt is conducted without closing the park and most people don't even know the hunt is taking place.

Other cities and urban areas have used citizen task forces to develop deer management plans. Several, including Dubuque, Coralville, Des Moines, Urbandale and Johnston have recommended controlled hunts to reduce deer

Tracking radio-collared deer gives wildlife biologists valuable information on deer habit and movement.

Roger A. Hill

numbers. Although these hunts haven't been in place as long as Black Hawk County's, all have been successful in at least maintaining deer numbers and most have been successful in reducing populations.

Not all citizen task forces have reached the same conclusion. The Iowa City task force recommended using sharp-shooters. Although more expensive, it has been very effective. The Linn County task force initially opted for a controlled hunt in Cedar Rapids in 1996, but after one year, the hunt was discontinued. As expected, deer numbers there have been on the rise.

Yes, the program appears to have successfully controlled and reduced overabundant deer numbers in Black Hawk County. Aerial counts over the past three years have been below the objective of 30 deer per square mile. The task force meets each spring to review the results of the aerial counts and the hunt, and make recommendations for the next year. Changes are forwarded to the DNR for approval and implementation.

Does Black Hawk County's success mean there are no complaints and everyone is happy? Not necessarily. Problems with deer still develop and deer still get into the flowers.

The difference is now there is a tool that can reduce the frequency of the problems. This type of "co-management" has also changed a highly controversial issue into one that generates very little comment.

Willie Suchy is the DNR's deer biologist stationed in Chariton.

UnDEERsirable Plants

Landscaping with certain plants may help discourage deer from dining in your backyard. Following is a sample of such plants, taken from the Polk County Conservation Board's "UnDEERsirable Plants" brochure.

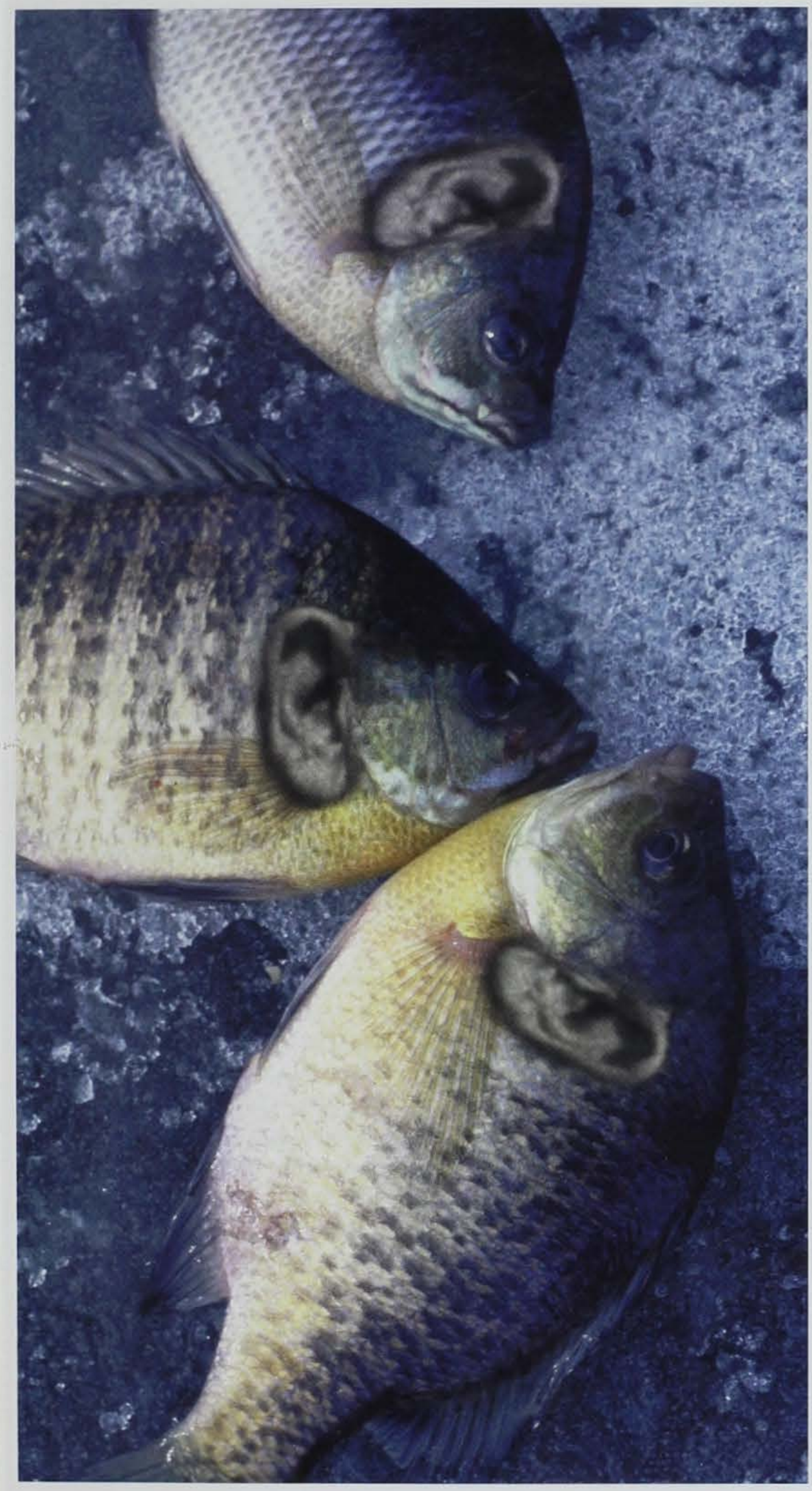
Hardy perennials: astilbe, baby's breath, bee balm, cyclamen, daisy, goldenrod, hibiscus, iris, peony, phlox, purple coneflower, rattlesnake master, stonecrop sedum, yarrow and yucca.

Annuals/biennials: sweet alyssum, begonias, larkspur, marigolds, morning glories, petunias, snapdragons, sunflowers and zinnias.

Bulbs: juniper, lily-of-the-valley, vinca and violets.

Herbs: chive, dill, mint, oregano, parsley, rosemary, sage and thyme.

For a copy of the brochure, contact the Polk County Conservation Board at 515-323-5300, or by email at pccb_info@co.polk.ia.us.



Do Fish Have Ears?

Early childhood fishing adventures probably started much the same for many young anglers. The elders typically instructed the youngsters to be quiet, don't make any sharp noises, like stomping feet or banging tackle boxes on the side of the boat. And if possible, keep low to the shore or low in the boat. The main objective the elders enforced was not to alarm the fish. Not being seen or heard can be a big factor when fishing for different species of fish.

It's obvious fish have eyes, but do they have ears? The answer is yes, but not like humans or other terrestrial animals. It's well-accepted that fish have the ability to hear, even though they don't have external ears, ear-

by Jerry L. Hudson

Nearly all sport fish have highly developed senses of hearing, sight, taste and smell. These senses have been employed for thousands of years to find food and avoid predators.

Sight is especially important to sight-feeding fish. Fish, such as largemouth bass and bluegill that feed in shallow waters, can see a wide range of colors, similar to the human eye.

Ron Johnson

drums or auditory canals.

To understand how fish hear, it is important to understand their environment and a little about fish anatomy. Consider how it feels sitting next to the motorists who cranks the bass or volume on the stereo. The feeling is caused by sound vibration moving through air. Fish hear and feel vibrations moving through water in much the same way. Sound moves much faster in water than in air and is felt as pressure sensations along the lateral organs of the body. The difficulty for fish is most of their tissue is only slightly more dense than their environment. Therefore, sound waves could easily pass through the tissue without being detected if it weren't for the higher density of bone and the differing density of the swim bladder. Bones of the skull, including the ear stones (otoliths) of the inner ear, and the gaseous swim bladder can be disturbed by sound waves, thus resulting in vibration.

In most higher evolved fish, the inner ear is enclosed in the cranium and usually consists of a delicate membranous purse-like structure connected to three semi-circular canals and two smaller pockets. The interior is filled with fluid and each pocket contains otoliths, numerous nerve endings and receptors that detect vibration and react to stimuli that allow fish to maintain balance. In carp, minnows, suckers and catfish, the auditory system is well developed. The first four vertebrae are modified into small bones and ligaments, which allow for vibration to be transmitted from the swim bladder to the inner ear.

The inner ear is also a specialized part of the lateral line sensory system, which is located along both sides of the body and head. The lateral line allows the fish to detect the shape, speed, action and movement of objects in water. It is particularly well developed in schooling fish, giving them the ability to synchronize their movements with the school.

Although fish can typically detect low-frequency sounds, the level varies greatly between species. It is believed some fish can tune out or reduce their sensitivity to background noises, such as wave action or motors, and concentrate on those noises that help produce a meal or signal danger. Some say a fish can hear bait thrashing around on the bottom of the lake. This may or may not be true, but the importance of sound should not be underestimated. Tackle manufacturers have gone to great lengths to develop lures or baits that take advantage of a fish's ability to hear. Tackle shops are filled with spinner baits, spoons and plugs designed to make noise or vibrate while being pulled through the water.

They also come in a wide variety of colors. While sound is important, sight may be just as important to some species of sight-feeding fish. Most fish have unique eyes that allow them to see in all directions, except directly behind them, and allow them to judge distance when they are facing the object with both eyes. (Granted, a fish can't see as clearly or as far as humans.) Their ability to see is largely dependent on the clarity of the water. Most fish can only see a distance of 10 to 20 feet, and in some cases a little farther.

Largemouth bass and bluegill usually feed in shallow water and can detect many of the same colors that humans see. However, deeper-feeding fish like walleye can't detect the full range of colors, although they can more easily detect orange and green. Colors bleed out with depth, the reds disappearing first, then yellows and finally blues. Still other fish may only be able to distinguish between different shades of gray and may depend on the flash of the lure or prey to find food. In some instances, colors may not be as important as trying to match the hatch. Trout prefer many different types of insects and tackle presentations should reflect the natural bait being consumed by the trout being sought.

For some fish, colors may not be important at all. They may rely on smell or taste. In nearly all fish, the sense of smell and taste exists to some degree. Salmon are known to have an acute sense of smell and are able to detect minute odors, which allow them to return to the stream where they were born. Catfish also have a great sense of smell, but their sense of taste is probably more refined than any other freshwater fish. Bullheads and channel catfish have taste receptors all over their skin and along their whiskers and can taste food before eating it. That is like tasting chocolate cake with your entire body. What a sensation that would be. When fish take the bait and quickly spit it out or when they bump the bait but don't take it, are good examples of how fish use smell and taste. Foreign odors on the bait are easily detected, helping the fish decide to eat the bait or leave it alone.

Fish are very attuned to their environment. Nearly all sport fish have highly developed senses of hearing, sight, taste and smell. These senses have been employed for thousands of years to find food and avoid predators. When trying to match wits with these aquatic creatures, it might help to follow a few basic rules: 1) avoid making sharp noises that can alarm fish; 2) stay low to the stream bank or in the boat; 3) take along several different types and colors of bait or lures and 4) wash your hands before handling bait. Insect repellants that contain DEET, for example, not only repel mosquitoes, but fish as well.

Jerry L. Hudson is a fisheries biologist for the department at Lewis.

Explore Iowa Parks FOR WINTERTIME FUN

by Tammy Domonoske and Deb Coates

'The only other sound's the sweep
Of easy wind and downy flake.
The woods are lovely, dark and deep.

from *Stopping by Woods on a Snowy Evening*
by Robert Frost

Clay Smith

Ty Smedes

Ask anyone why they choose to live in Iowa and somewhere near the top of the list is the change of seasons. Granted, winter may not top the list of four, since Midwest winters can be brutal. But at the same time, they can be very calm and beautiful, offering an array of outdoor activities. And with more than 60 state parks in Iowa, what better setting to enjoy the splendor of winter and all it provides.

Many summer activities can be equally as fun in the winter. Ice fishing, for example, can provide hours of enjoyment during those long winter days, not to mention a skillet full of panfish caught through the ice is a real treat in the middle of January.

Hiking is an inexpensive and healthy way to enjoy the outdoors. Iowa state parks are some of the most beautiful places to hike and view nature. They offer miles of trails, and winter's openness makes everything much more visible.

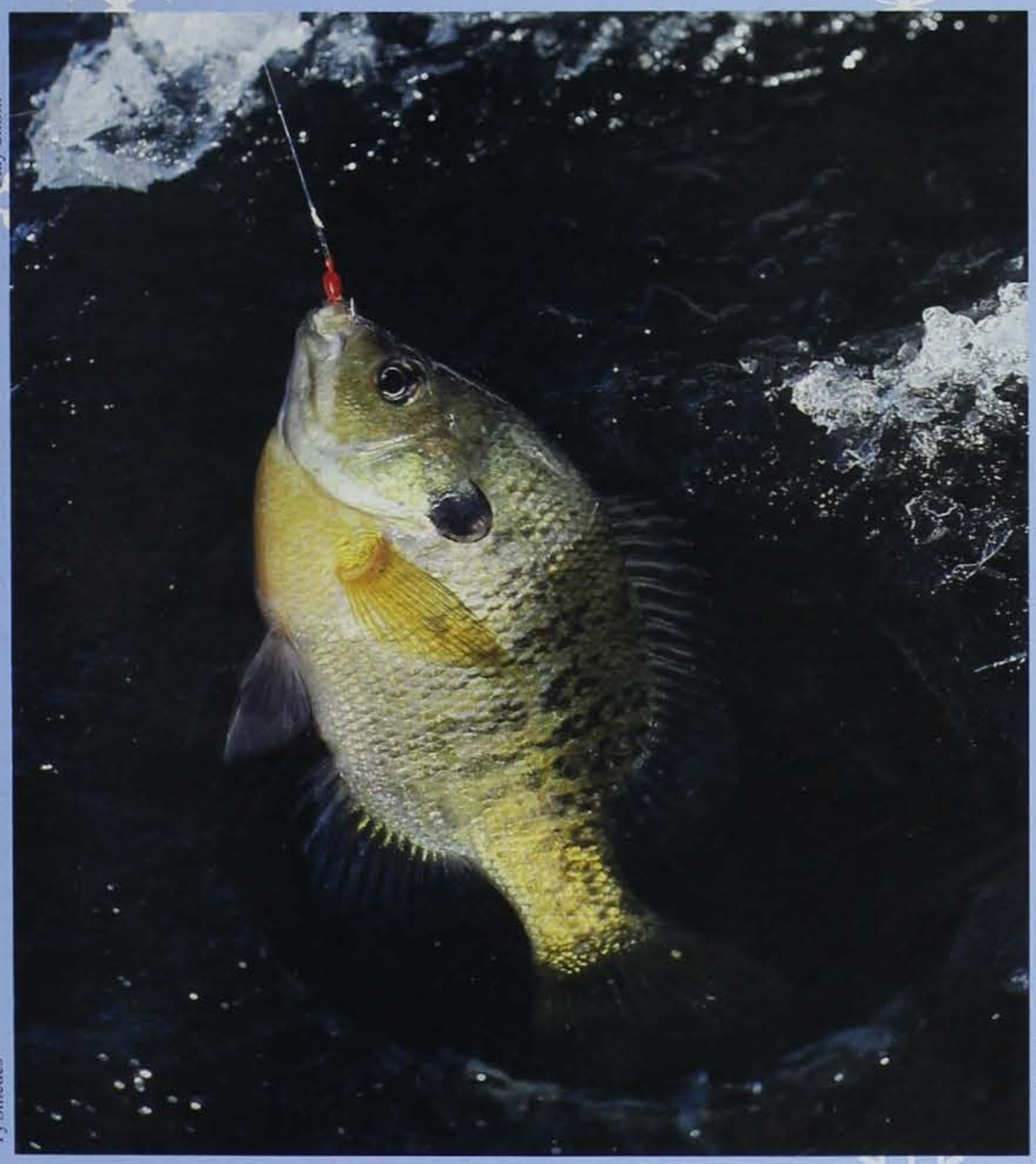
Winter is also a good time to start a new year-round family educational activity. Phenology, the study of nature's seasonal rhythms, is easy to do. All that is needed is a pencil and calendar, although a field guide and pair of binoculars are helpful as well. During or shortly after a hike, document what nature events you observe and note them on the calendar. Keep track of events such as when deer shed their antlers, when a nearby lake freezes over or when geese and robins fly south.

Not all birds fly south for the winter, and a winter hike will prove it. Iowa has many colorful winter residents, which can also be recorded on the calendar.

The audible sounds of the season — the geese honking, bucks scraping the trees with their racks, lake ice cracking and popping, or a tom turkey getting in an early gobble — are just as intriguing.

Kite flying does not have to be just a springtime ritual. Winter sky astronomy can be very interesting. And horseback riding does not have to be saved for warmer days. Be inventive.

Some activities are exclusively winter sports. How often they can be enjoyed depends on the temperature and snowfall.



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Lowell Washburn

Ken Formanek

Lowell Washburn

Tips For Wintertime Fun

As with all activities, safety should be the top priority. This is especially important with winter activities. Before venturing out on any lake or pond during the winter make sure the ice is safe. Beware of hypothermia. Dress appropriately for each activity, preferably in layers and with underclothing that will "wick" moisture away from the skin.

Because Iowa state parks winterize their facilities October through March, running water is not available.

Not sure a winter sport is for you? Before you invest a lot of money in equipment, look into renting or borrowing. Also, look for classes offered through city recreation departments and county conservation boards.

Two state parks, Backbone and Pine Lake, offer year-round cabin rental, making it more convenient to stay and enjoy all four Iowa seasons. Reservations for all state park cabins are taken beginning the first business day following New Year's Day.

Not all state parks are designed to accommodate every type of winter activity. Please call with any questions before heading out to . . .

Explore Iowa State Parks

Iowa has approximately 35,000 registered snowmobiles with riders waiting to take advantage of a park's winter wonderland. Experienced snowmobilers say a snowmobile club can make the activity much more fun. Clubs organize trips, hold contests and gather for winter picnics. Snowmobile clubs and counties often work together with the state to develop, maintain and groom trails.

Snowmobiling, however, does require knowledge of rules and regulations. Invest in one of the

snowmobile safety classes scheduled throughout the state every year.

Years ago it seemed everyone owned a pair of ice skates and every town had an ice rink. Today, few towns provide this winter recreation, but nearly every state park in Iowa has a lake, and with good ice conditions they make a beautiful "rink." It may require clearing some snow cover, but a game of duck-duck-goose or tag on skates can be great fun.

In the last decade, thousands of

Ken Formanek

people have discovered cross country skiing. Next to swimming, it can provide one of the best physical workouts, exercising all major muscle groups. But cross county skiing can be whatever you wish to make it — as strenuous or as relaxing as you like.

Skijoring, another winter activity gaining popularity, is cross country skiing with a twist, or in this case, a tail. In this sport, a properly trained canine companion with a tow rope helps pull the skier.

Snowshoeing is becoming more popular every year. No matter how deep the snow gets, snowshoes can get you where you want to go. Snowshoes come in different sizes and different price ranges, so look for a pair that fits your needs. Snow shoes create winter hiking opportunities no matter how much snow falls.

Any one of these quiet winter trail activities become a whole new experience when done by the light of a full moon. Gliding through the woods on skis or quietly hiking along on a moonlit night is one of the most serene activities around.

Winter does not have to be boring or depressing. You can beat cabin fever and the winter blahs by enjoying winter activities at any one of Iowa's state parks. Each is unique and each is a wonderful area for wintertime fun.

Tammy Domonoske is the park manager at McIntosh Woods State Park in Cerro Gordo County.

Deb Coates is the park ranger at Pilot Knob State Park in Hancock County.

Ken Formanek

An Alien Invasion by Kim Bogenschutz

They come on boats. They are stowaways in cargo. They creep across our borders. And sometimes they are smuggled in by people. Iowa is under attack by invasive species, and the invasion is full-blown.

The threat of invasive species in Iowa and across the country is a significant problem. Scientists estimate almost 4,500 plants and animals have been introduced into North America during the past 100 years. Some of these species have been introduced intentionally and are valued for their agricultural, aesthetic or recreational qualities. Others, though, have been intentionally introduced and have caused unintentional damage. Still other species have been unintentionally introduced and have caused severe negative impacts. These are the invasions that need stopping.

What is an invasive species?

Animals and plants outside an area where they naturally occur are called nonnative, exotic, alien or nonindigenous. An invasive species is a nonnative organism that thrives in and quickly dominates its new environment. Invasive species cause harm to natural resources, agriculture, human health and the economy. Once established, invasive species are difficult, if not impossible, to eliminate.

When species are introduced into a new area, they often leave behind the natural predators, diseases and competitors that kept their populations balanced in their native habitat. Without natural limiting factors, populations of nonnative species can explode and become invasive. However, not every organism removed from its pests and predators becomes invasive. Other factors contribute to invasions, mainly the biology of a species and disturbances to the land.

Lowell Washburn

Most invasive species have certain biological traits that make them successful in new habitats. These species generally tolerate a wide range of environmental conditions; reproduce early, often, in large numbers, and in multiple ways; and grow rapidly. However, the most-adaptable and fastest-growing species would not be able to get a foothold if all the available space was taken up by thriving native communities.

Disturbance is often an invader's best ally. Overgrazing by cattle and deer creates gaps in local plant communities construction strips roadsides and housing developments of native vegetation. And clearing boat channels removes important aquatic vegetation. These and other disturbances create opportunities for invasive species to become established. Once established, their rapid growth and reproduction rates allow them to displace native species.

Lowell Washburn

Three of Iowa's problem invaders are (clockwise from left) Eurasian watermillfoil, zebra mussels and purple loosestrife.

Illustrations on following pages prepared by Mark Müller for the poster "Invasive Species: Plants and Animals Threatening Our Natural Resources"

What problems do invasive species cause?

When an invasive species shows up in unwanted places, public land managers, recreationalists and property owners become concerned. Invasive plants and animals can completely change the native habitat and displace the species originally living there. Invasive species have been cited as the second leading cause in the decline of native populations of plants and animals, following habitat destruction and ahead of pollution.

The negative effects of invasive species are not always immediately evident. Sometimes we do not recognize a problem until an invasive species has become well established. Once that happens, dealing with both the invasive species and the resulting damage can be difficult and costly. The impacts of invasive species cost governments, natural resource agencies and private landowners across the country an estimated $138 billion every year. These costs are due to loss of productivity, degradation of habitat, chemical control, biological control, removal, research, monitoring and many other inconveniences.

Invasive species can out-compete native species, degrade wildlife habitat, reduce agricultural yields, affect bees and other useful insects, hinder recreational activities, and influence water quality and quantity. Some invasive plants form dense stands, excluding native vegetation. Compared to the species they replace, invasive plants like purple loosestrife and leafy spurge do not provide food or habitat for birds and animals. Dense mats of Eurasian watermilfoil impair boating, swimming, fishing, navigation, and flood control and degrade water quality as well as fish and wildlife habitat.

Some invasive species are predators, devouring native species that have developed no defense to the invader. Invasive animals also compete for food with native species. Zebra mussels and bighead carp filter plankton out of the water that is needed by larval fish, mussels and other filter-feeders. Invasive insects like gypsy moths and Japanese beetles often kill the plants they feed on.

Other invasive organisms spread diseases or are diseases themselves. With no controls, they can change the composition of the landscape. Trees that were common 50 years ago — American chestnut and American elm — are virtually unknown in some forests today.

Where do invasive species come from?

Historically, natural boundaries such as oceans, mountain ranges, or deserts limited the spread of organisms. Human activities are primarily responsible for breaking down these barriers to dispersal. The rate of nonnative introductions has increased as global trade and traveling have expanded in recent decades. Many invasive species found in North America were brought here from other countries. However, species native to the United States may also become invasive when transported to another region of the United States.

Some introductions, such as purple loosestrife, garlic mustard, gypsy moths and common carp, are intentional and do unexpected damage. Nurseries selling exotic plants, transportation departments seeking quick-establishing groundcovers for erosion control, exotic pet enthusiasts, and even researchers and weed control agencies have all contributed to the expansion of invasive species.

Many more introductions are unintentionally. Ballast water, which ships take up for stability when they have little cargo and release elsewhere when they take on a full load, has introduced zebra mussels, round gobies, ruffe, and a range of microorganisms into the Great Lakes. Lumber products and wood packing material harbor insects, fungi and diseases that can attack trees. Shipments of grain, vegetables, hay and live plants are sources of agricultural and other pests. Travelers can unknowingly transport seeds, eggs, bacteria and fungi that land on their clothing while abroad. Movement of species within the U.S. occurs on vehicle tires, boats, hiking boots, planes, and railroad cars and also when people dump bait buckets, release exotic pets, or take a cutting of the invasive flower in someone's backyard.

Help Fight the Invation

We cannot completely guard against accidental introductions of invasive species. However, by taking the following precautions, each person can make a critical difference in preventing the spread of invasive species.

- Do not transport plants, animals, mud and water to or from natural areas.
- Remove plants, animals and mud and drain water from equipment (boats, clothes, tents, dogs) before transporting.
- Thoroughly clean equipment that has been in an infested area before using it in another area. Clean and dry anything that comes in contact with water.
- Never release animals or plants (aquarium species, bait, garden plants) into the wild unless they originally came from that waterbody or area.
- Do not buy or plant invasive species. Choose native plants for gardens and habitat projects.
- Minimize landscape disturbances.
- Learn to identify invasive species of state and regional concern. Report any sightings of invasive species or questionable species to your local DNR representative for identification.
- Volunteer to help monitor for or remove invasive species from vulnerable natural areas in your community.

The Invaders

The list below describes a dozen of Iowa's worst invaders.

Bighead Carp
(*Hypophthalmichthys nobilis*) and
Silver Carp
(*Hypophthalmichthys molitrix*)

Since their introduction to the United States in 1972 and 1973 by fish farmers in Arkansas, bighead carp and silver carp have successfully expanded to much of the Mississippi River basin


Bighead Carp

as well as many states outside the basin. Besides the Mississippi River, bighead carp have been found in the Chariton, Des Moines and Iowa rivers. The bighead carp is a large, heavy-bodied fish that attains lengths of 30 inches and weighs up to 60 pounds. Its head and fins are slate gray with silver sides blotched with black that fade to a white or yellowish belly. Its head encompasses nearly one third of the total body length. The silver carp is very similar to the bighead carp. It is a large, deep-bodied fish reaching a maximum size of about 3 feet and 60 pounds. The sides are uniformly silver in color with a white to silvery-white belly. Its head encompasses just less than one third of the total body length. Both species have very small scales. Bighead and silver carp are plankton feeders and may have significant negative impacts on food sources for larval fish, adult filter-feeding fish and native mussels.

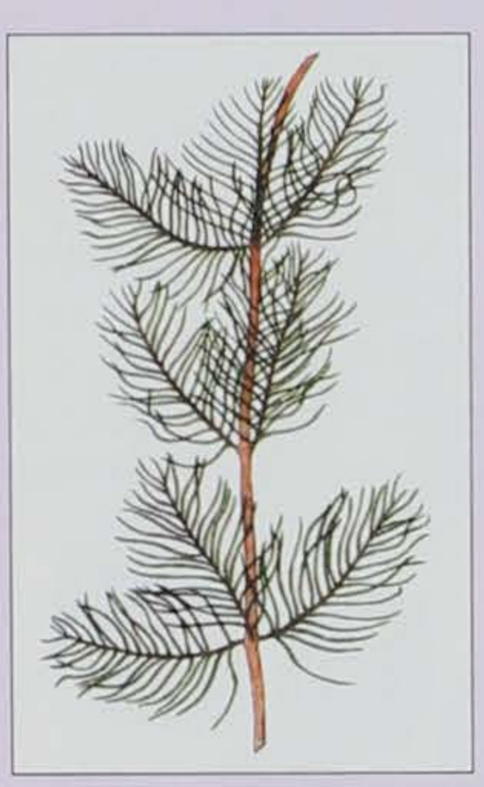
Common Buckthorn
(*Rhamnus cathartica*)

Common buckthorn is native to Eurasia and was introduced to North

America as an ornamental in the mid-1800s. It is a tall shrub or tree growing 20 to 25 feet tall and up to 10 inches in diameter. Common buckthorn bears black, round berries. Its dull, green leaves have tiny teeth on the margins and twigs often end in thorns. Buckthorn's dense growth shades out native understory plants in Iowa's oak-hickory and oak-savanna forests and riparian habitats. It also occurs in thickets, hedgerows, pastures, abandoned fields, roadsides, prairies and on rocky sites. Although nonnative buckthorns have caused widespread problems, they are still legally sold as ornamentals.

Eurasian Watermilfoil
(*Myriophyllum spicatum*)

Eurasian watermilfoil is a submersed aquatic plant native to Europe, Asia and northern Africa. It was introduced into North America in the 1940s and has spread to at least 45 states and three Canadian provinces. It has been identified in 23 waterbodies in Iowa, including the Mississippi River. The long stems have feather-like leaves arranged in whorls of four around the stem. Each leaf is finely divided into 9 to 21 pairs of leaflets. Leaves are limp when removed from the water. Each stem usually branches several times as it reaches the water surface, forming a dense floating mat. Eurasian watermilfoil competes aggressively with native aquatic plants, thereby reducing diversity. Dense surface mats interfere with boating, fishing and swimming, can lower lakefront property, and ruin spawning areas. The spread of Eurasian watermilfoil has been attributed mainly to accidental transport of plant fragments from one lake to another. A single fragment of stem or leaves can take root and form a new colony. It is illegal to transport Eurasian watermilfoil in Iowa.



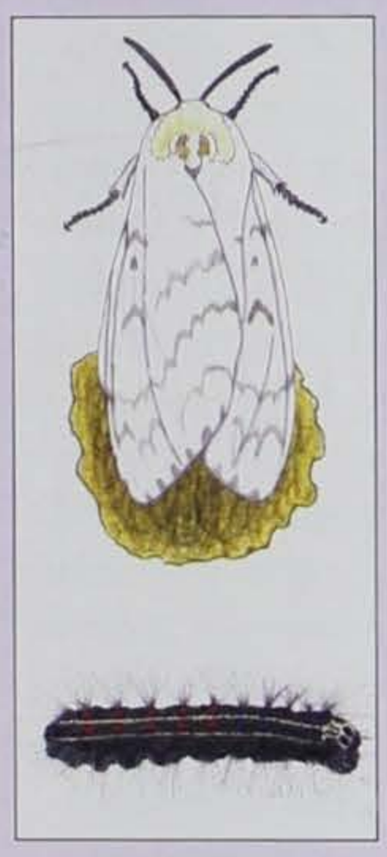
Garlic Mustard
(*Alliaria petiolata*)

Garlic mustard was first recorded in Long Island, New York in 1868. This European native was likely introduced as a garden plant, grown for folk remedies and food. Scattered populations are found throughout the state but most problems occur in eastern Iowa. Garlic mustard ranges in height from 12 to 48 inches. Leaves and stems have a distinctive odor of garlic or onion when crushed. First-year plants look like a clump or rosette of scallop-shaped leaves. Mature plants have alternate, triangular, toothed leaves; four-petaled,

white flowers; and slender seedpods. It starts its growth early in the spring and becomes a dense cover that shades out native wildflowers and tree seedlings in woodlands, especially in disturbed areas. The seeds are carried on animal fur, clothing, and equipment. They also spread by floating on moving water.

Gypsy Moth
(*Lymantria dispar*)

Even though they were brought from Europe to the eastern United States in 1969 in an attempt to breed them with silkworms, only a few gypsy moths have been found in Iowa. Caterpillars are gray with five pairs of blue spots and six pairs of red spots along their back and "hairs" along their entire body. Adult males are brown with black wing markings. Females are larger and lighter in color than the males and have wavy wing markings. Females cannot fly. The caterpillars do the most damage by eating leaves, often killing trees. Gypsy moths have spread throughout the United States mainly on recreational vehicles, plant material, and items such as picnic tables where females deposit tan-colored egg masses.

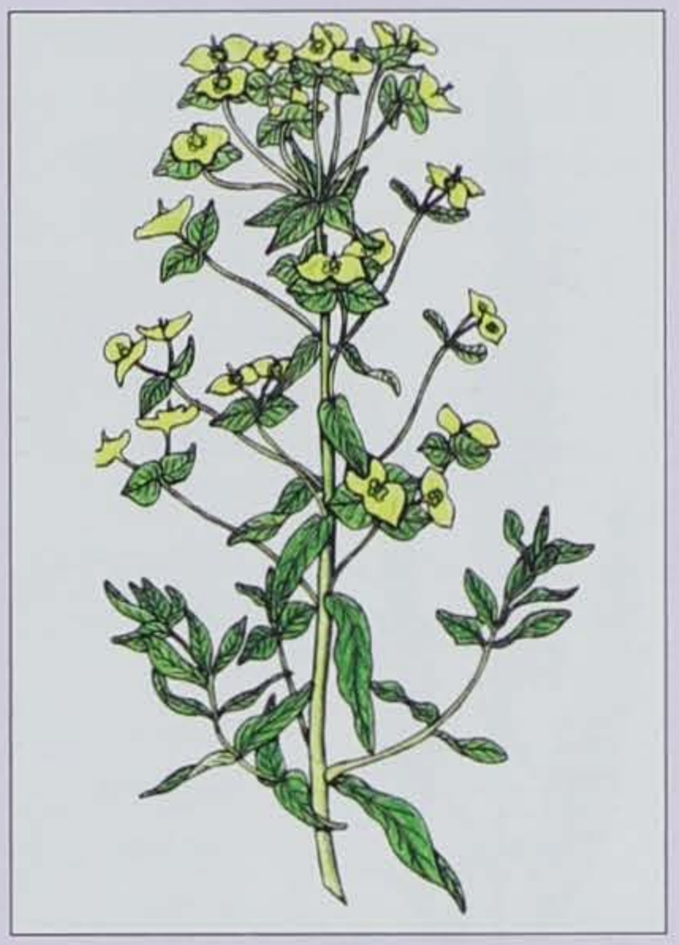


Japanese Beetle
(*Popillia japonica*)

Japanese beetles were first established in the eastern United States about 1916. They have been found in 13 Iowa counties and are becoming a more visible problem in Cedar Rapids, Dubuque and the Quad Cities area. These metallic, black-green insects have distinctive white markings and reddish, leathery wings. The adults are usually about 3/8-inch long. They feed on the flowers, leaves and fruit of almost 400 plant species. They often do serious damage to roses and linden trees. The larvae feed on roots, damaging lawns and golf courses by reducing the ability of grass to absorb water. Infestations of Japanese beetles spread as adults move to favorable food and sites suitable for egg laying.

Leafy Spurge
(*Euphorbia esula*)

Leafy spurge is native to Europe and Asia and was first recorded in the United States in 1827. It is a serious concern in many western Iowa grasslands and prairies. Leafy spurge grows from 6 to 36 inches tall and has greenish-blue alternating leaves. Distinctive yellowish-green flower clusters and a milky, white sap aid in identification. Leafy spurge tolerates a wide range of moisture conditions but prefers sunny roadsides, prairies, woodlands and savannas. It is allelopathic, producing chemicals that harm competitors. It easily forms hybrids, grows in dense stands with deep roots and damages animal digestive systems. Leafy spurge can shoot seeds 15 feet and spreads quickly in disturbed or overgrazed areas.



Purple Loosestrife
(*Lythrum salicaria*)

European settlers introduced purple loosestrife to North America in the 1800s probably as an ornamental plant. Because of its popularity as a garden plant, intentional introduction continued, and it is now found in every state in the United States and all Canadian provinces. Scattered

infestations occur throughout Iowa. Purple loosestrife is a dense, hardy perennial most easily identified by its showy magenta flowers. Flowers are five- to six-petaled and are in long terminal spikes. The long, narrow leaves are generally opposite along the stem. Stems are stiff, four- to six-sided and angular. Mature plants grow up to 7 feet tall. Dense, monotypic stands replace native wetland plant species and the wildlife that depend on them for habitat. They also hinder waterflow and cause problems for recreationalists. Purple loosestrife spreads easily in ditches, streams, lakes and wetlands. Seeds are widely distributed by animals, machinery, people and water. It is illegal to import, sell or distribute purple loosestrife in Iowa.

Sericea Lespedeza
(*Lespedeza cuneata*)

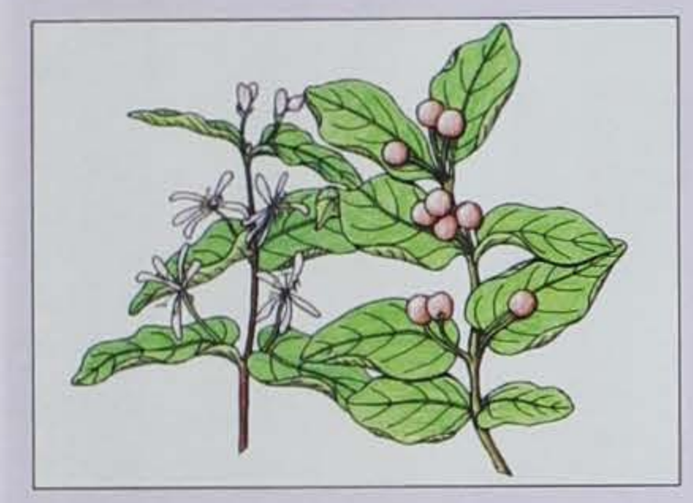
Lespedeza is a herbaceous plant native to Europe and Asia. It was first introduced into the southern United States for erosion control and to provide cover and forage for wildlife. It is becoming a serious problem in southern Iowa counties. Lespedeza usually grows 12 to 18 inches tall but can reach heights of 4 feet. White flowers with pinkish-purple veins intermingle with its simple, straight leaves along a hairy, upright stem. Lespedeza is successful in open areas, especially in fields and along roadways, where it displaces native plants. It is an aggressive seeder and spreads rapidly because of the large amount of seed it produces.

Spotted Knapweed
(*Centaurea maculosa*)

Spotted knapweed was probably introduced in the 1890s as a contaminant in alfalfa or hayseed from Europe and Asia. It is a serious concern in pastures, native dry prairies, and undisturbed ditches and railroad beds in many western Iowa counties. It usually grows 3 or 4 feet tall and has thin, hairy stems. Its upper leaves are linear, whereas its lower leaves have a dissected appearance. Single, thistle-like, pinkish-purple flowers grow on stem tips from late June to August. Spotted knapweed spreads aggressively in sunny grassland areas that have been disturbed or overgrazed. It is unpalatable to livestock and native wildlife. Spotted knapweed decreases diversity and forage production while increasing surface run-off and sedimentation. It is often spread when hay is transported.

Tartarian Honeysuckle
(*Lonicera tatarica*)

Tartarian honeysuckle is native to Asia and western Europe and was introduced to North America as an ornamental shrub in 1752. It is a concern in uplands in the eastern 2/3 of Iowa. All nonnative honeysuckles are stout, erect shrubs and are easily distinguished from native honeysuck-



les which are twining, woody, vine-like plants. Tartarian honeysuckle grows 3 to 10 feet tall and has smooth, bluish-green leaves; pairs of fragrant, pinkish, tubular flowers; and yellow, orange or red berries. It can survive in a variety of light and moisture conditions but thrives on sunny upland sites found in forest edges, roadsides, pastures, abandoned fields, fens and lakeshores. Honeysuckles grow in dense thickets, shading out native understory plants. They cause erosion and sedimentation of lakes and waterways. Infestations spread when seeds are eaten and dispersed by birds and other animals.

Zebra Mussel
(*Dreissena polymorpha*)

Zebra mussels are small mussels native to the Caspian Sea region of Asia. They were introduced into the Great Lakes in 1986 in ships' ballast water. They quickly spread to parts of all the Great Lakes, the Mississippi River and other inland rivers and lakes in the United States. Zebra mussels are found throughout the entire length of the Mississippi River that borders Iowa but have not been identified in any inland waters. Zebra mussels have a yellowish or brownish D-shaped shell with alternating dark and light stripes. They can grow up to 2 inches long, but most are under an inch. Zebra mussels usually grow in clusters containing numerous individuals attached to solid objects. Zebra mussels compete with other organisms for food, kill native clams by colonizing on their shells, clog power plant and public water intakes pipes, block boat engine cooling systems and cover beaches with dead, broken shells. The primary way zebra mussels spread from one waterbody to another is on boats. Adults can attach to boats or equipment that sits in the water. Microscopic larvae can be carried in livewells or bilge water.

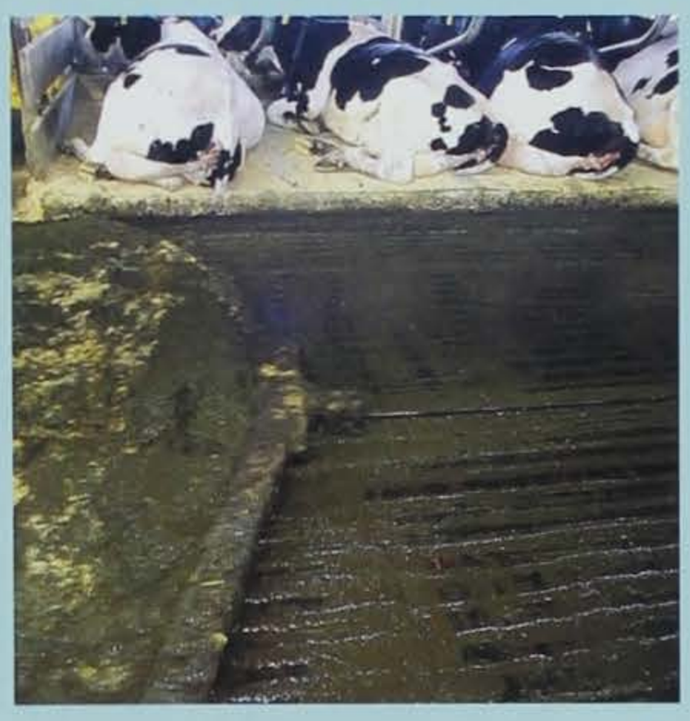
Kim Bogenschutz is the aquatic nuisance species program coordinator for the department in Boone.

Top Deck Dairy, in Westgate, Generates Electricity from Cow Manure

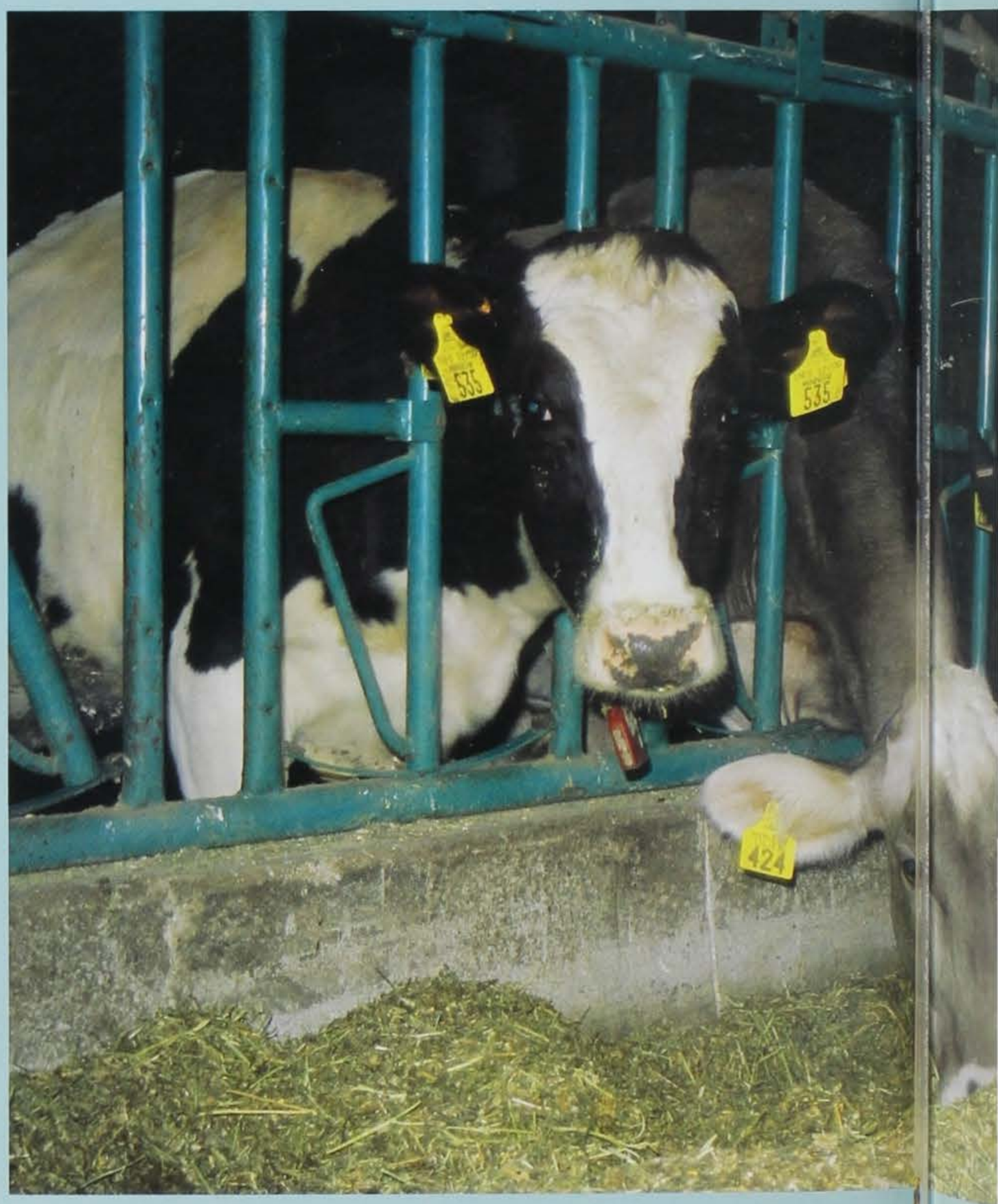
Got Manure?

Aritcle by Julie Tack • Photos by Clay Smith

Iowa's first cow-manure methane recovery system is turning waste into electricity in northeast Iowa. Add the benefits of odor and air emission reductions into the mix, and this dairy farm is operating a promising technology for Iowa's future.



About 17,000 gallons of manure produced daily from 700 dairy cows at the Top Deck Dairy operation is scraped to a digester system for methane recovery.



Judy and Roger Decker of Westgate own and operate Top Deck Dairy, Inc. along with their sons, Derek, Jason and Justin. Through a methane recovery system, the family is taking advantage of the manure produced at their dairy to generate electricity and heat.

The Construction Process

When the Decker family decided to expand its dairy operation from 300 to 700 cows, they researched the potential of installing an anaerobic digester for electricity production.

The Department of Natural Resources and the USDA's Natural Resource Conservation Service (NRCS) provided a $157,900 grant to build the digester, while Alliant Energy supplied $200,000 for the generators and to connect the system to the utility grid. Top Deck Dairy funded the remaining costs of the $450,000 facility.

Construction of the system began in the fall of 2000. Dan Meyer, Iowa State University Extension engineer, coordinated construction of the project, and electricity production began in May 2002. To date, the system has operated successfully, with no major mechanical problems.

Once methane has been captured for electricity production, the remaining effluent is pumped to a storage basin for later use as a fertilizer.

Additional Information on Methane Energy Recovery:

Iowa DNR Renewable Energy Programs
- www.state.ia.us/dnr/energy

Methane Energy Information from U.S. EPA
- www.epa.gov/agstar OR www.epa.gov/methane

Consumer Methane Energy Information from U.S. DOE
- www.eren.doe.gov/consumerinfo/refbriefs/ab5.html

Methane Projects in Minnesota
- www.mnproject.org

Purdue University Methane Research
- www.agcom.purdue.edu/AgCom/pubs/AE/AE-105.html

The Science

Methane is the main component of natural gas. It is also a component of biogas, which is generated during the decay of organic (living or once-living) materials in an anaerobic — or oxygen-free — environment. Oxygen-free conditions occur in natural systems like the bottom layers of wetlands and bogs, and in artificial systems like landfills, lagoons and specially designed tanks called anaerobic digesters. The methane produced can be burned to generate heat or electricity.

The Technology

The Deckers installed a system called a plug-flow digester that treats the manure. About 17,000 gallons of manure produced daily is scraped to the digester, where it decomposes and subsequently produces methane gas.

The captured methane gas is sent through a connecting pipe to a 150-horsepower engine with a 100-kilowatt generator and a 30-kilowatt microturbine. The generators create 864,000 kilowatts of electricity annually, enough to power 100 homes. That electricity is sold to Alliant Energy for about $.02 per kilowatt.

Heat from the engine and microturbine are captured to preheat the manure, improving the anaerobic process. Hot water from a heat exchanger provides floor heat to the parlor area, where the cows are milked.

The Benefits

Interest is growing in methane recovery at livestock operations because of the environmental and economic benefits that can be generated. Capturing methane can control odor and decrease the potential for pollution. While systems are currently expensive, their societal and environmental benefits may outweigh those costs.

A methane digester (equipment in forefront) captures energy that fuels two generators (housed in building in background).

Facts & Figures

Top Deck Dairy, Westgate

Facility Description:
- 300-cow free-stall barn and parlor built in 1997
- 350-cow barn and connecting alley completed in May 2001
- 180'-by-240' earthen manure storage tank holds 2 million gallons of manure

Digester System:
- Plug-flow digester tank is 27 feet by 124 feet by 12 feet deep. Two additional 13'-by-13' tanks preheat manure.
- 17,000 gallons of manure produced daily at the facility are used for methane production

Electricity Production:
- 150-horsepower, 6-cylinder engine powers a 100-kilowatt generator
- 30-kilowatt microturbine generator
- 864,000 kilowatts of electricity are produced annually, enough to power 100 homes

Environmental Benefits:
The electricity produced at this facility from renewable resource annually avoids:
- 432 tons of coal
- 1,808 tons of carbon dioxide

Project Investment:
- Total cost of construction for system: $450,000
- $157,900 in funding came from Iowa DNR and NRCS
- $200,000 came from Alliant Energy

Energy cost savings in avoided electricity use:
- $40,600 through avoided electricity and heating costs, along with income from selling excess generation

Project Partners:
- Dan Meyer, project manager, ISU Extension
- Iowa Department of Natural Resources
- USDA Natural Resource Conservation Service (NRCS)
- Alliant Energy

Just as importantly, methane recovery develops a renewable resource, offsets fossil fuel consumption and reduces environmental pollutants.

Economically, offsetting energy use through on-site power production reduces energy bills. Through an agreement with Alliant Energy, Top Deck is the first dairy in Iowa to put power on the electrical grid, and is one of 20 operating in the country today.

The Potential

Top Deck Dairy is a strong demonstration of the effectiveness of methane recovery, especially at larger livestock facilities. Each year, Iowa's livestock confinement operations—including cattle, hogs and chickens—produce 81 million tons of manure. This has the potential to generate 2.8 billion kilowatts of electricity each year, equivalent to the energy consumed by 325,000 homes annually.

For more information on methane recovery in Iowa, go to the Iowa DNR web site at: **www.state.ia.us/dnr/energy**, or contact Jim Bodensteiner with the DNR at 515-281-8416; e-mail: Jim.Bodensteiner@dnr.state.ia.us

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Julie Tack is an energy information specialist for the department in Des Moines.

Marketplace

Marketplace

Marketplace

Wilson Island

PARKS PROFILE

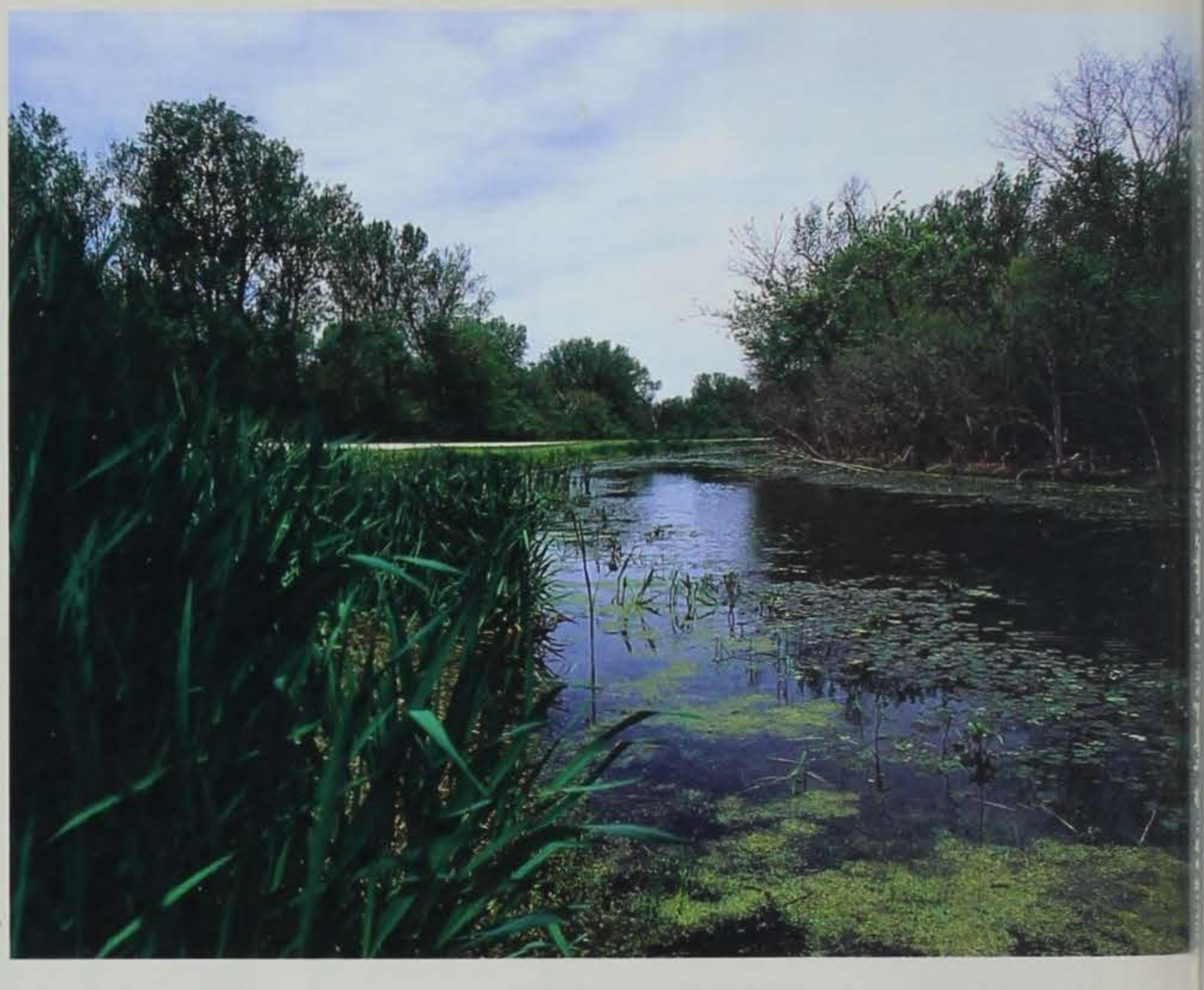
Wilson Island State Recreation Area

Something For Everyone

by Chris Anunson

Given the name, one would expect Wilson Island State Recreation Area to be a parcel of land surrounded by a body of water. A visit to the area however, on the banks of the Missouri River in western Harrison County, will reveal little that resembles an island.

A trip back in time, to the first decade of the 1900s, may shed some light on how Wilson Island earned its name. It was then that the Missouri River would often create islands in its ever-changing course through the floodplain. That is also when — and how — Wilson Island came to be.



Clay Smith

Earlier Days

Some of the earliest descriptions of the area come from Lewis and Clark on their historic trip to the Pacific Coast. History indicates they were in the proximity of Wilson Island during July 1804. The party camped on the Missouri River, not far from DeSoto Bend, on July 30. Wilson Island lies south of the DeSoto Bend, although river changes make it virtually impossible to pinpoint exactly where the camp was. In fact, based on the first survey of the area in August 1858, Wilson Island as it sits today would have been partially in the river and partially in what is now Nebraska.

During the 1930s, a family settled on the island, which at the time was under state ownership, and began farming among the young tree patches that had already become established on the island. Soon after settling, the family contacted the state hoping to purchase the land, and the Executive Council of Iowa agreed to sell. Upon hearing of the agreement, Gov. George Wilson asked the Council to reconsider. He felt it should be set aside for the people of Iowa, due to the natural beauty of the area. The Council agreed, the land was

DNR photo

The "chute" is an ideal place to fish in the spring and summer (opposite page) and ice skate in the winter (left). Wilson Island is also popular with campers, especially youth groups (below).

preserved and the final piece of the name puzzle was solved.

Access to the area was difficult until 1959 when a levee and road were developed, thus ending the "island" status. The project was part of the development of the DeSoto National Wildlife Refuge and the creation of DeSoto Lake.

Easy access brought development and increased use to Wilson Island. Between 1960 and 1965, a shower house, two boat ramps, eight pit toilets and three camping areas were established. Roads were developed where old river channels once ran.

The ecology of the area is directly related to the river. A factor in all environments is the abundance or lack of water. Wilson Island is no exception.

In earlier days, frequent flooding was common in the area. Flooding drowns plants unable to survive the lack of oxygen in the soil and can also leave behind as much as a foot of silt, further smothering shorter plants. Cottonwood, sycamore and willow trees dominated the early landscape of Wilson Island because they excelled in that type of environment. However, channelization in the 1940s produced fewer floods and other plant species, such as cedar and dogwood trees, have thus been able to gain a foothold.

The lack of flooding has also led to a change in the area's wildlife makeup. Wild turkeys, which require dry conditions for their young, and badgers, with their underground dens, are now increasing their populations. They join already established populations of deer, rabbits, squirrels, raccoons, coyotes and a few unpopular skunks.

Approximately 60,000 people visit the 544-acre recreation area every year. Many come for the great camping. There are 140 campsites, split between a modern and a non-modern area. The modern area offers electricity at all sites, a shower house and RV dump station. The campsites are spacious and all have gravel pads.

The non-modern area offers a more rustic experience. Only 20 of the sites have electricity, and there is no shower house.

DNR photo

Although campers spend 18,000 nights annually camping at Wilson Island, the campgrounds usually fill only during Memorial Day and Labor Day weekends.

Also available are two youth group areas, allowing church youth groups, Boy Scouts, Girl Scouts and others an opportunity

Parks Profile

Wilson Island is a great spot to take in the fall snow goose migration (right). Its fine silt, decomposing trees and decaying leaves provide ideal growing conditions for morel mushrooms (below).

to camp in a large area at a low cost. For families that don't own a camper or prefer not to tent camp, a cabin is available. Located in the modern campground, it sleeps four and is equipped with electricity, heating and air conditioning. Two grills are provided outside for cooking.

Wilson Island is equally well-known for the popular boat ramp on the Missouri River. It is not uncommon on summer weekends for the parking lot to be filled with boat trailers. Boaters come for the ramp, which collects minimal silt, making it an easy launch site. They also come for the two open shelters along the riverfront, which can and have been rented for a wide range of events, from weddings and family reunions to motorcycle club picnics.

The playground is always a popular spot for families because of its proximity to the campgrounds and the picnic area. Bicycling is also very popular. It's a great way to see the park, spend time with family and get some exercise.

Ken Formanek

For those who like fishing, the Missouri River is the place to be. Like other rivers, the Missouri is home to a wide variety of fish, including sturgeon, drum, gar, carp and catfish. For those who have young children or prefer a quieter place to fish, the "chute" is ideal. A narrow channel of water that borders the park on the east side, the chute holds all of the species found in the river. It has also been known to produce bluegill, bass and crappie. The variety can change depending on river flow, since high water can allow fish to come and go.

Seasonal changes may affect the type of park usage, but not the level. Autumn brings cooler nights for camping, plenty of hunting opportunities and hundreds of thousands of snow geese to DeSoto Wildlife Refuge. Wilson Island's close proximity to DeSoto make it an ideal place to camp and take in the migration.

Autumn is also a great time of the year to take a walk on one of the area trails. With colors changing and no pesky mosquitoes, the five miles of trails are a great way to experience the ecology of a flood plain forest.

DNR photo

The trails wind through the dense timber and along the river chute, a great place to view wildlife.

Winter attracts cross-country skiers and snowmobilers. There is also a good chance to see a bald eagle flying overhead or perched in a cottonwood tree. The shallow backwater chute is also an ideal spot for ice skating.

If you like morel mushrooms, Wilson Island is the place to be in the spring. The fine silt, decomposing trees and leaf debris that cover the ground provide ideal growing conditions for all types of mushrooms. Just be sure to identify which of these unique and interesting growths are edible.

Wilson Island has been developed to supply as many outdoor opportunities as possible without creating a negative effect on the natural features or resources of the area. It is as Gov. Wilson envisioned, "A recreation area for all to enjoy."

Chris Anunson is the park manager at Wilson Island.

WILSON ISLAND AT A GLANCE

LOCATION: Located 11 miles southwest of Missouri Valley.

FISHING: Half-mile trail along the shoreline and boat ramp provide access to the Missouri River.

HUNTING: Entire area, excluding campgrounds and other developed sites, is open to hunting.

CAMPING: There are 140, well-shaded, spacious campsites. Modern camp area offers showers, flush toilets and all-electric sites. Non-modern area has 20 electric sites and two areas for organized youth group camping.

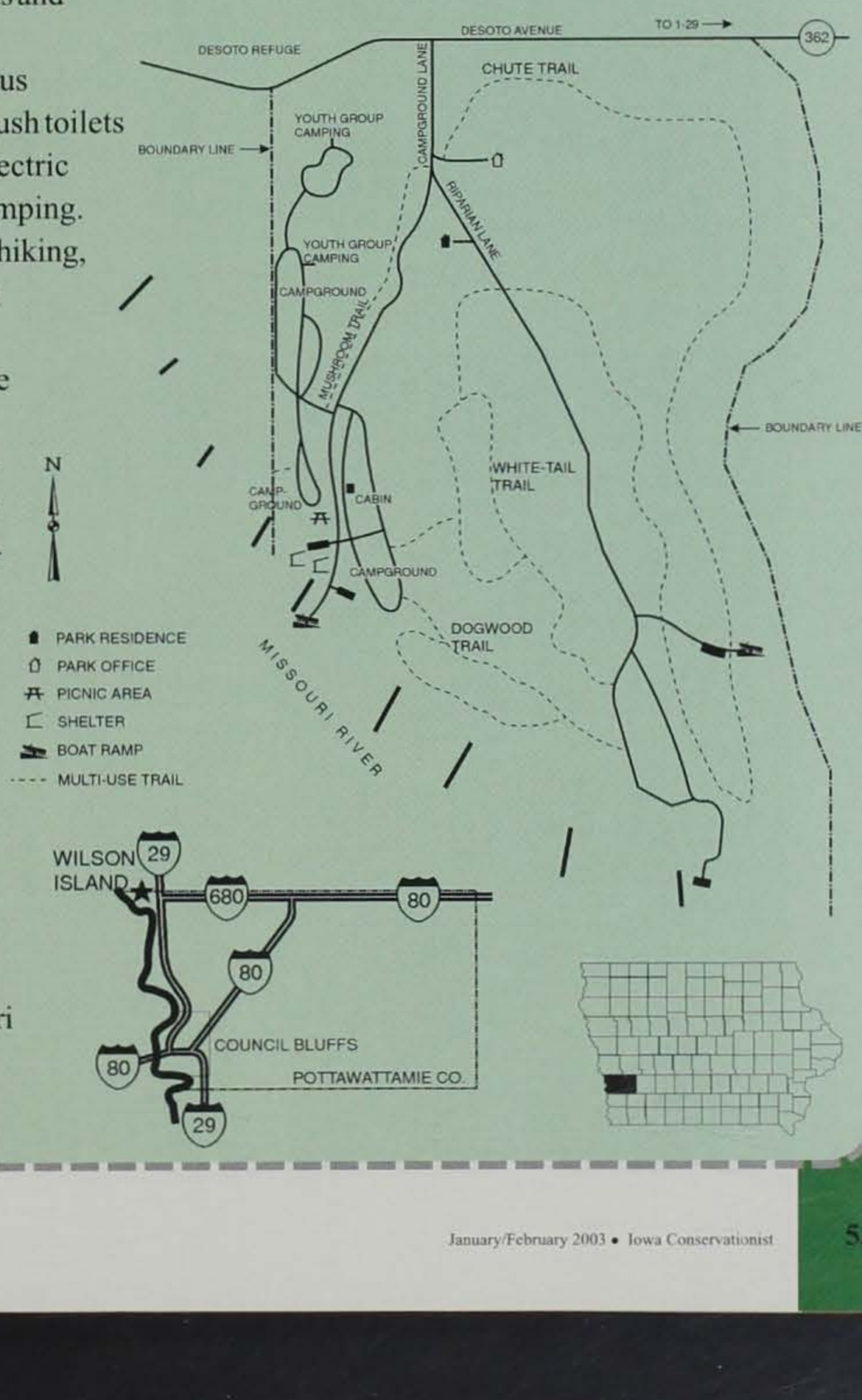
TRAILS: Approximately five miles of trails for hiking, snowmobiling, cross-country skiing and mountain biking.

CABIN RENTAL: Non-modern cabin available year-round. Equipped with electricity, two bunk beds, a table and benches. No cooking, water or sanitary facilities furnished; campground shower and rest room building located nearby. Reservations accepted beginning first business day in January; two-night minimum rental.

PICNICKING: Picnic area with shelters located along the shoreline of Missouri River. Shelters may be reserved for a fee through park manager.

FUN FACTS: DeSoto National Wildlife Refuge located just north of Wilson Island. Hundreds of thousands of migrating waterfowl make the refuge a stopping point every year.

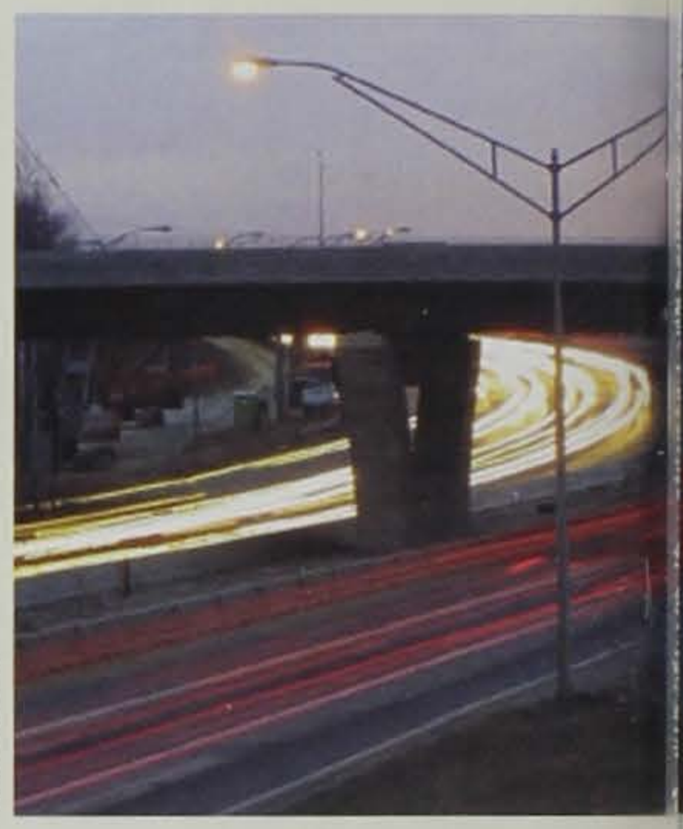
CONTACT: 32801 Campground Lane, Missouri Valley, Iowa 51555; 712-642-2069; Wilson_Island@dnr.state.ia.us.



CONSERVATION 101

Successful Bus Cleanup Program Offers Money Saving Lessons for Iowa Motorists

by Brian Button



Bob Castelline

Next to a home, a vehicle is likely the most costly item you own. But with each mile and year, vehicles not only lose value, their performance can drop. A new program designed to cut school bus emissions, however, is yielding lessons for all motorists.

By taking advantage of what state school officials are learning, you can take the driver's seat to slow depreciation and slash operating costs. That helps keep money in your wallet, power under the hood and reduce emissions. Iowa's first-in-the-nation Bus Emissions Education Program (BEEP) is designed to help school bus fleets rev-up performance while cutting costs and emissions. The goal is to make Iowa's buses the cleanest in the U.S. by reducing harmful diesel soot particles.

Twice last year, voluntary school bus emission tests were offered free through BEEP. Donors such as Banker's Trust and the Iowa Farm Bureau help fund the beneficial effort, and emission testing is courtesy of Radcliffe-based Mirenco, Inc. Since smoke often means unburned fuel, the valuable data helps schools target scarce resources to those buses that could reap the most cost savings and efficiency from a mechanics touch. The tests help detect emissions and combustion inefficiencies that otherwise can go unnoticed even with good mechanical upkeep. Akin to a person who feels healthy but learns of a medical condition after a diagnostic test, knowledge can make a priceless difference. The startling results and basic

Money Saving Tips To Rev-up Power, Hold Resale And Cut Soot

While Iowa's schools are benefiting from free emissions tests, you don't need emissions data to profit from preventative maintenance. You can cut fuel costs, reduce harmful emissions and improve resale value while getting better engine performance with these simple, money-saving tips. Here's how.

Read The Directions

Read the owner's manual. Following recommended maintenance helps prevent malfunctioning parts before they cause problems or serious and expensive damage. Some parts need routine checks, others such as filters and fluids, need routine replacement. If you don't keep service records, start now.

Huff and Puff

Dirty air filters are a common problem, despite the paltry cost ($5) and a quick do-it-yourself job. Dirty, clogged air filters choke airflow, starving combustion and emitting smoke you may not even see. This unburned fuel and extra emissions not only harms the environment, but can damage valves and cylinders, further reducing power and fuel efficiency. Regularly replace air filters following the owner's manual, and replace more often if you drive in dusty conditions.

Oxygen Sensors: An Exhaustive Effort

Ignoring your oxygen sensor is an economic double-whammy. The sensor checks oxygen levels in the exhaust, then onboard computers adjust the fuel mix in the combustion chamber for peak, efficient performance. As sensors wear, engines can burn excess fuel at your cost.

Extra emissions also work the expensive catalytic converter to death. Avoid this by changing the

All motorists can benefit from Iowa's first-in-the-nation Bus Emissions Education Program.

lessons gleaned from emissions tests apply to individual motorists and cars as well, even without the aid of an exhaust test.

Still not sold on the benefits of simple maintenance? Then read what these bus mechanics who are taking advantage of the program have to say.

"I was surprised at the ease at which we saw some significant improvements," explained Dave Kramer, maintenance supervisor for the Johnston School District. The simple test found that bus 29 was one of four buses of their 30-bus fleet with high emissions. An air filter change gave better fuel combustion and dropped unhealthy soot output 70 percent. The other buses were repaired by valve adjustments — the diesel equivalent of a simple tune-up for gasoline engines.

"Those are things that are extremely easy to do for minimal cost. I was surprised by the easy difference we could make with minimal effort. My mindset is that if we can do it, anyone can do it. You don't need to be a mechanical guru. You can make significant differences by observation and simple things," said Kramer, referring to all Iowa motorists and their vehicles.

He said poor combustion not only wastes fuel and creates smoke, it coats cylinder walls with fuel that washes protective oil from sealant rings creating more wear. Left unchecked it could have meant a new bus engine, which costs between $6,500 to $10,000 each. The air filter was an inexpensive, simple-to-install part that costs $5 for cars and $10 for buses.

A little wrench work yielded similar successes in eastern Iowa. All 14 buses in the Jesup Community School District fleet tested well for emissions, except bus 10. After simple repairs, though, "Every driver asked what happened to bus 10," said Gary Henderson, head mechanic at Jesup Community School District. "It went from a 58 mph to a 68 mph bus overnight." Before repair, unburned diesel fuel passed through the engine and tailpipe as excess soot. Better combustion yielded fuel savings and power with a simple valve adjustment and new air filter.

Dolores Bergert, transportation director for Central Community, said BEEP emissions data helped her pinpoint mechanical problems undetected by drivers. "The testing gives us insight on engine combustion problems. Then, we can get the engine repaired before it becomes a big problem. That's a big benefit to us and is going to save us money."

Brian Button is an air quality information specialist in Des Moines.

Tax Savvy Support for Efficient School Buses

This tax season, give yourself a write-off while supporting efficient school transportation and cleaner air. A charitable donation to Iowa's Bus Emissions Education Program (BEEP) helps fund emission tests for cleaner, more efficient transportation and air quality curriculum for students. For more information, visit www.beeponline.org or call 515-899-2623.

BEEP is a partnership with the School Administrators of Iowa, Mirenco, the departments of natural resources and education and the Iowa Pupil Transportation Association.

oxygen sensor following the owner's manual rather than waiting for the "check engine" warning light.

The Big Engine That Couldn't

Paying for a big, powerful engine only to sacrifice horsepower and waste fuel is foolish. Get routine tune-ups for peak performance and fuel savings. Ensure fuel injectors are checked for efficiency-robbing deposits that increase emissions and make the vehicle harder to start and drive. Tune-ups pay for themselves in fuel savings and averted engine wear.

Kids' Corner

Roger A. Hill

Winter Snooze

by Trisha Yauk

What do Iowa's creatures do in the **winter**? Some animals, like the monarch butterfly, leave Iowa and migrate to warmer climates in the fall. Others stay in Iowa for the winter and change (**adapt**) to the **cold** temperatures by growing more fur or storing food for the winter. A few animals **hibernate**.

Roger A. Hill

Hibernation is when animals go into a "deep sleep" for a long time. Their **heart rate** slows down, they breathe less often and their body **temperature** drops. To have enough energy to make it through the winter, these animals eat a lot of food in late summer and fall. When the days become cold and the amount of daylight (**photoperiod**) decreases, hibernating animals move to their dens, caves or tunnels where they will begin their winter slumber.

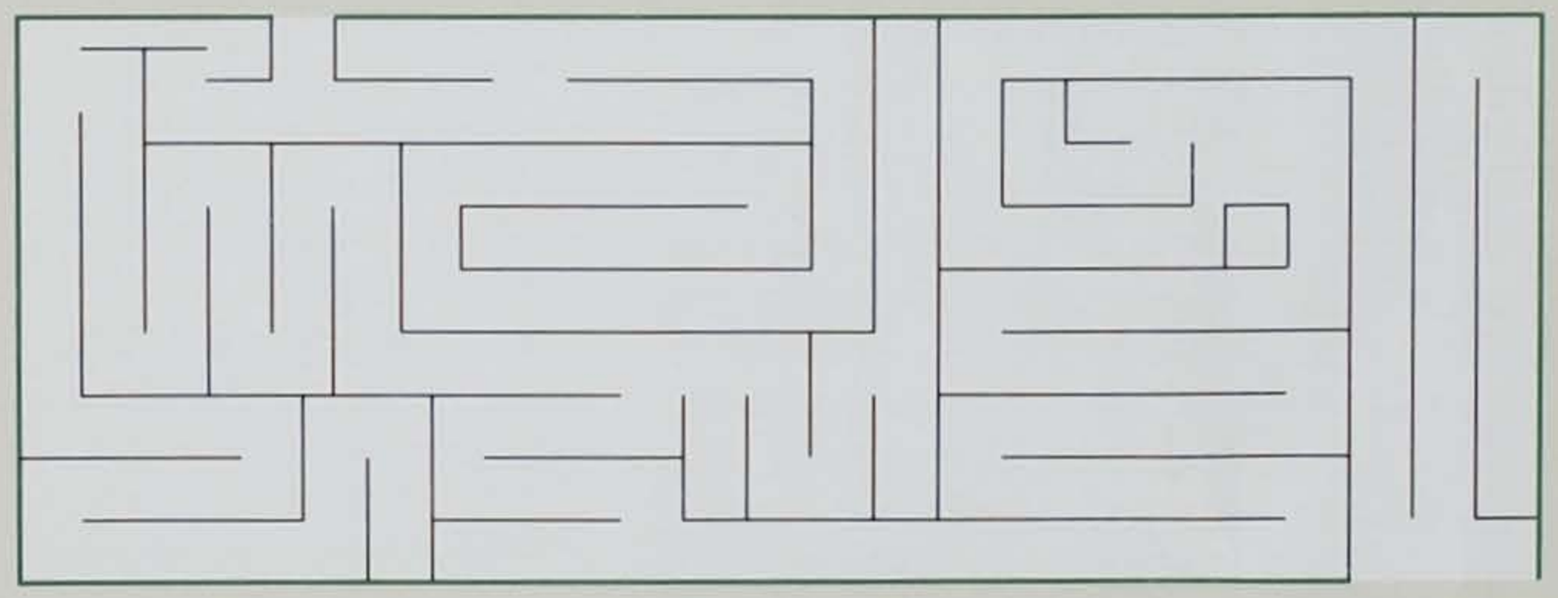
CLOCK-WISE FROM TOP: woodchuck, opossum and big brown bat

Ty Smedes

Why do animals hibernate? It's all about **energy**. During the winter, animals that don't hibernate spend a lot of energy finding food and staying warm. Hibernating animals save this energy because they do not have to look for food or keep their body warm.

The next time you're outside playing in the **snow**, think about those animals that take a wintertime snooze to stay alive. Would you like to be a hibernating animal?

Trisha Yauk is a seasonal naturalist with the department.

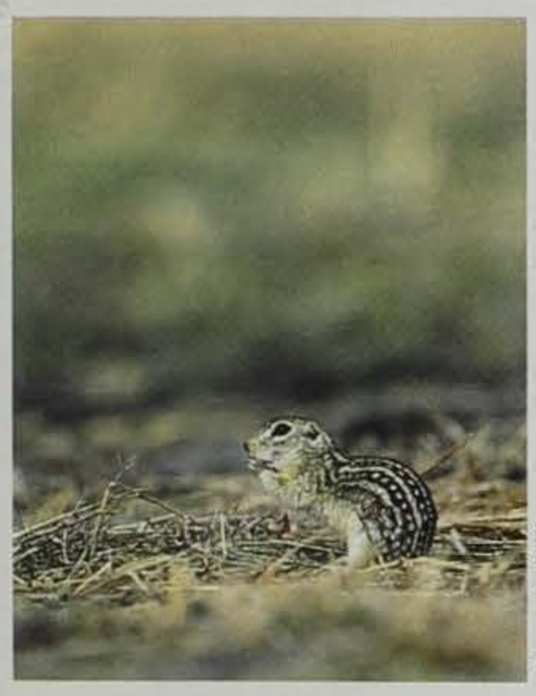


Help Barney the Bat Find His Winter Home

Hibernation Word Find

C	Q	U	A	D	A	P	T	H	E	M	O	S	Y
K	H	S	U	R	K	J	B	H	C	Q	D	J	H
A	I	X	N	C	O	L	D	E	H	O	T	M	E
Y	B	R	T	O	F	R	L	A	Y	W	L	S	A
P	E	L	C	L	W	Z	N	R	C	S	P	D	R
Q	R	A	W	S	I	M	G	T	J	N	Y	F	T
T	N	J	I	H	N	B	S	R	X	L	E	K	R
W	A	P	Q	E	T	G	O	A	K	H	N	L	A
D	T	E	M	P	E	R	A	T	U	R	E	W	T
I	E	N	E	B	R	G	M	E	C	V	R	Z	E
Z	J	B	V	X	S	E	H	I	B	Y	G	S	H
D	V	N	K	U	C	N	P	T	H	M	Y	I	E
A	U	P	H	O	T	O	P	E	R	I	O	D	N

Hibernate
Snow
Adapt
Energy
Winter
Photoperiod
Heart Rate
Temperature
Cold



Roger A. Hill

Did You Know?

Did you know not all hibernators hibernate the same way? A true hibernator's body temperature drops to just above freezing. The hibernator is in such a deep sleep you might think they are dead if you see them.

A torpor hibernator's body temperature doesn't drop as much as a true hibernator's. These hibernators wake up more often than true hibernators.

How many of these hibernators have you seen?

True Hibernators
Woodchuck
Big Brown Bat
Thirteen-lined Ground Squirrel
Meadow Jumping Mouse

Torpor Hibernators
Black Bear
Raccoon
Opossum
Striped Skunk

Ty Smedes

Roger A. Hill

CLOCKWISE FROM TOP: Thirteen-lined ground squirrel, skunk and raccoon

Conservation Update

Spring Wild Turkey Licenses On Sale

Resident 2003 spring turkey licenses are currently on sale at any one of the nearly 900 Electronic Licensing System for Iowa (ELSI) sales agents statewide.

All spring turkey licenses, including the limited quota state forest zones, will be sold over the counter. Licenses for the state forest zones will be sold until quotas are reached or the last day of each respective season, whichever comes first.

All other licenses, including free landowner/tenant licenses, will be sold through the end of the respective seasons. Archery-only licenses, valid statewide for all four seasons, can be purchased through the final day of the last season.

Season dates are: Season 1, April 14-17; Season 2, April 18-22; Season 3, April 23-29; and Season 4, April 30 - May 19.

Residents may purchase up to two spring turkey licenses, as long as at least one is for Zone 4, Season 4. If two licenses are purchased, both must be either archery-only licenses or combination gun/bow licenses.

Residents must also purchase a small game hunting license and pay the wildlife habitat fee, if normally required to do so. Resident landowners and tenants and their qualifying juvenile children need only the wild turkey license if hunting only on land they own or rent.

Nonresidents must apply through the ELSI telephone ordering system by calling 1-800-367-1188 Jan. 4-26. Nonresidents must choose a zone and season before calling.

Roger A. Hill

The 2003 Spring Turkey Hunting Guide is available at any ELSI license agent and DNR offices. It is also available online at www.state.ia.us/wildlife.

Deadline To Remove Ice Shacks Feb. 20

The Feb. 20 deadline to remove permanent ice fishing shelters from state-owned land and water is rapidly approaching and anglers are encouraged to not wait until the last minute to get them off the ice. Due to the mild winter, the deadline will not be extended this year.

Failing to remove the permanent shelter is subject to a misdemeanor fine. If the shelter falls through the ice, the owner is responsible for removing it and is also subject to a littering fine.

Pheasant, Hunter Style

Ingredients:

3 fresh-from-the-Iowa-fields pheasants
1/4 cup olive oil
2 whole cloves of garlic plus 1 teaspoon chopped garlic
1 1/2 ounces dried imported mushrooms
6 tablespoons chopped pancetta or smoked bacon
1 cup dry white or red wine
2 heaping tablespoons dried rosemary
2 bay leaves
3/4 cup of chicken or beef stock
1 cup peeled, seeded tomatoes (canned diced tomatoes are fine)
salt and freshly ground pepper to taste

Method:

First, soak mushrooms in warm water for 15 minutes. In a large skillet on top of the stove, heat oil. Add garlic. Arrange pheasants to your own liking, whole or cut up, and cook over high heat, uncovered, stirring with a wooden spoon, until meat starts to brown. As meat turns color, lower heat to medium and add pancetta or bacon. Continue to cook, uncovered, and as the meat browns further, add wine, bay leaves, rosemary, drained mushrooms and chopped garlic. Cover, lower heat, and simmer, stirring occasionally until wine cooks out. Add tomatoes, stock, salt and pepper. Cover and simmer 45 minutes or until tender. Discard garlic cloves and serve.

—From the kitchen of Lt. Gov. Sally Pederson

Boat Registrations Expire April 30

Clay Smith

Iowa boaters and anglers are reminded this is the year to renew boat registrations.

Boat owners are advised to renew now before current registrations and assigned numbers expire at midnight April 30. Boat owners must file renewals at the recorder's office in the county they reside.

With a few exceptions, all vessels operated on public waters must be registered. Those excluded from registration requirements include traditional non-power and non-sail canoes and kayaks 13 feet or less in length, and inflatable non-power and non-sail vessels 7 feet or less in length.

Registration fees vary from $5 to $28 depending on the type and size of the vessel. A $1 writing fee per registration is charged in addition to the registration fee.

Boaters with questions concerning specific regulations should contact their local conservation officer or county recorder's office. Copies of the *Iowa Boating Regulations* brochure, which includes a table of boat registration fees, can be obtained at county recorders' offices; by writing Iowa DNR, Wallace State Office Building, 502 E. 9th St., Des Moines, Iowa 50319-0034; or by calling 515-281-5145.

Largemouth Bass Virus Found In Some Mississippi River Fish

Fisheries workers conducting routine autumn surveys have seen a number of largemouth bass with open wounds at overwintering areas in Pools 10 and 11 on the Mississippi River.

Preliminary laboratory tests indicated these fish suffered from a variety of bacterial infections, primarily *Aeromonas hydrophila,* a bacterium commonly found in freshwater environments. Virus testing also detected the presence of largemouth bass virus (LMBV), a pathogen detected earlier this summer on Pools 3 and 7 by the LaCrosse Center. It appears to be a new fish virus on the Mississippi River. LMBV has been previously detected in 17 states including Illinois, Indiana, Michigan, Minnesota and Wisconsin.

For anglers, eating fish infected with these organisms does not pose a known threat to human health. Largemouth bass virus has only been reported from cold-blooded animals (fish, reptiles and amphibians). However, anglers should heed common sense by properly cooking all fish and not consuming dead or sick fish. In addition, they should wash their hands thoroughly with soap and water after fishing.

The primary reason for this disease outbreak is probably due to stress, said Scott Gritters, Iowa DNR fisheries biologist at Guttenberg. Stress can lower the natural defenses fish have against disease. Bass living in the Mississippi River may encounter a variety of stressful conditions including poor water quality, repeated handling by anglers, long-distance movements to overwintering areas and crowded conditions in backwater habitats.

Anglers who come across fish with lesions are asked to notify a local fisheries biologist. In this way, fisheries scientists can track this outbreak and document its impact on the Mississippi River fishery.

Conservation Update

New Year Brings New 'User Friendly' DNR Web Site

Bob Castelline

If you visit the State Capitol Complex in Des Moines, you'll find a great deal of construction going on. But not all of it makes use of bricks and backhoes.

Visitors to the DNR's web site will find some striking changes beginning in January. The department has begun a web site rebuilding and redesign project that will take nearly a year to complete. But the final product will be worth the wait.

"We've gone into this project with an eye toward the needs of our users," said Bob Castelline, the site's designer.

The redesign focuses on three objectives, one of which is to create a site that operates from the user's perspective. A second objective is to create a site that maximizes ease of use while maintaining a strong visual image. The homepage will feature two completely separate navigation areas. One is for users who are familiar with DNR structure. The other will feature easy-to-follow links that will guide users who might not know what the DNR has to offer.

Users will also find a new page header and eye-catching graphic elements, as well as news, features, tips, links to important outside agencies and much more. All this will be done on a home page that will take about five seconds to download on a 56K modem.

In addition, users eventually will be able to subscribe to the *Iowa Conservationist* on-line, with the convenience of making payment by credit card.

The final objective is to create a web site that has consistency in form and function throughout. With three divisions, 15 bureaus and more than 2,000 pages containing roughly 2 gigabytes of information, this is no simple task.

The DNR homepage is currently up and running, but all bureau pages won't be complete until the fall of 2003. While the site should be fully functional at all times, users should be aware that occasional interruptions in full use may occur.

Iowa Family Grants Permanent Easement Along Trout Stream

The Iowa DNR received a first-ever permanent easement along 1.75 miles of Otter Creek trout stream in Fayette County. Kim and Lois Dummermuth, and Dummermuth Farms, Inc. donated the 95-acre easement to the DNR that will allow angler access to the stream forever.

There have been numerous informal agreements with landowners to allow people access to fish trout streams, but this easement is different, said Rick Hansen, with the land acquisition bureau at the DNR.

"It is unique in that it is the only one in Iowa that is a permanent easement that will stay with the land," Hansen said. "The agreement allows public fishing access by foot only and gives us (DNR) the flexibility to effectively manage the stream."

The Dummermuths had always allowed anglers access to the stream by their land without expressed permission. In 2001, the DNR estimates there were 4,900 angler trips to Otter Creek, which is managed as a put-and-take trout fishery. The DNR stocks about 7,000 catchable-sized trout each year.

There has already been some stream improvements done to Otter Creek. A parking lot will be built in the near future, possibly as early as this spring.

Volunteering Today For A Better Iowa Tomorrow

Volunteer Helps Give Cedar Rock State Park A New Look

At first, it may seem that architecture and natural resource management have almost nothing in common, however Glenda Edwards, a graduate student in Iowa State's architecture program may disagree. For the last year and a half, she has been working to enhance the interpretation and reputation of Cedar Rock State Park in Quasqueton.

Cedar Rock State Park is home to The Lowell Walter House, a Usonian-style home designed by the famed architect Frank Lloyd Wright. Usonian homes were a break from Wright's better-known prairie style houses. They were designed to be functional, practical and affordable — a truly American architecture. The Walter House exemplifies Wright's "organic" approach to architecture and blends seamlessly with the park's natural surroundings including the Wapsipinicon River and the limestone bluffs for which the site is named.

In addition to redesigning the exhibits at the interpretive center as part of her master's thesis, Edwards recently organized a juried logo design competition for the site. Entries were solicited from students at ISU, UNI and Iowa, then reviewed by a panel of judges in December. The new logo will be used for a wide variety of promotional material, from letterhead and directional signs to the souvenirs sold in the gift shop. The winning logo, pictured above, was submitted by University of Iowa student Bradley Dicharry of New Orleans, La.

The overwhelming response to the project and quality of submissions received suggests other similar design competitions may be in the works within the Conservation and Recreation Bureau of the Iowa DNR. It's also proof that the actions taken by one volunteer can indeed make a difference.

Upcoming NRC and EPC Meetings

The dates and locations have been set for the following meetings of the Natural Resource Commission and Environmental Protection Commission of the Iowa Department of Natural Resources.

Agendas are set approximately 10 days prior to the scheduled meeting date. For additional information, contact the Iowa Department of Natural Resources, Wallace State Office Building, 502 E. 9th St., Des Moines, Iowa 50319-0034.

Natural Resource Commission:

— February 13
Linn County—
Toddville-Wickiup Hill
Outdoor Learning Center

— March 13
Des Moines

Environmental Protection Commission:

— January 21
Des Moines

— February 17
Des Moines

— March 17
Des Moines

Editor's Note: *Our apologies for omitting the Iowa Cattlemen's Association (ICA) from the list of participants in "Recipe for a Success Story — The Iowa Plan for Open Feedlots" in the May/June 2002 issue. The ICA, the ISU Extension Service and the DNR all played lead roles in developing the plan.*

Warden's Diary

Lesson Learned

by Chuck Humeston

Ask any conservation officer what part of the job frustrates them most and chances are the answer will be deer season.

For some reason, it seems that's when people tend to push the edge of the envelope the most. The calls come in, there is too much ground to cover and many officers start to feel a little frustrated. That was the feeling I was getting as I sat in my squad atop a hill listening to the scanner.

Using a radio to coordinate a deer hunt or communicate the movement of deer is illegal. But that doesn't matter to some. I could hear the chatter over the scanner, and it sounded close.

"Get ready you guys on the east road, they're coming your way. Whoa, man, your slug went right over the top of my head!"

I kept circling the area looking. I couldn't see anyone in the timber. Maybe they weren't wearing blaze orange, a requirement when hunting deer with any firearm. No orange, slug flying over someone's head, that's a recipe for disaster. If people could see what a lot of officers have seen, fewer people would take chances like that.

About that time the cell phone rang. It was a Turn-In-Poachers call. Someone had witnessed someone shooting at a deer from inside a moving pickup. The location of the reported violation was very close. I started that way, and despite having an excellent description of the vehicle and direction of travel, I found nothing. I was too late. Disappointed, and frankly feeling a little useless, I started working my way toward home, patrolling as I went.

I braced myself for the inevitable tirade, since in my experience, it is usually the police officer that gets chewed out. Surprisingly, dad walked right by me to his son and said "Didn't you learn anything in hunter safety? What were you thinking about?" It was apparent the woodshed was in session.

The sun was setting when I noticed the vehicle on a blacktop road. The two occupants were dressed in orange. In an adjacent field, I could see another pickup moving slowly. I'd seen this before, and it usually meant someone was up to no good. I turned around and pulled behind the vehicle on the road. They started to drive away, so I turned on my red and blue lights. The driver and I made eye contact in his rear view mirror, and I shook my head indicating it would be in his best interest to pull over. As I started to look at their licenses, my scanner crackled, "They're coming right at you."

I looked into the field. They were coming right at me all right. About a half dozen deer at full speed, with the pickup I had noticed earlier in pursuit. The deer ran onto the highway, and paused momentarily at the unfamiliar surface under their hooves as another pickup came barreling at high speed toward them. The tires squealed as the driver locked up the brakes.

BANG! The alarmed deer bounded away as the passenger in this third pickup opened the door, jumped out onto the shoulder of the road and started firing at the deer, missing them.

It was still legal shooting hours, but it was dark enough I

could see the muzzle flashes. All this happened less than 50 yards from me, despite my emergency lights flashing and my DNR decal glowing in the setting sun. Apparently they were so intent on what they were doing they didn't see me.

I handed the licenses back to the two men I had stopped. "Here guys, I don't have time to look at them, I'm going to be a little busy."

I got back into my squad and drove in front of the truck still sitting on the road. After all the frustrations of the day, the temptation was strong to say all the things that I knew I would later regret. But I bit my tongue, and instead said simply, "Heck of a way to hunt deer fellows. Let me see your licenses."

On the dashboard was the "talk-about" radio I had heard over my scanner. By now the other pickup across the road had come to a fence opening, and was starting to do the slow crawl out of the area. I pointed at him, and the driver rolled down his window. "I want to talk to you."

The violations were too numerous to mention here, but shooting from the road and chasing deer with a vehicle were the most glaring. I didn't write all the ones I could have written, but I did issue one to the young man who shot at the deer. He was all of 15 years old.

I explained the tickets and was about to leave when a car pulled up. Someone apparently had called the young man's parents while I was in my squad writing the tickets. Dad and mom got out of the car and walked toward me. Their faces and body language indicated they were not happy. I braced myself for the inevitable tirade, since in my experience, it is usually the police officer that gets chewed out. Surprisingly, dad walked right by me to his son and said "Didn't you learn anything in hunter safety? What were you thinking about?" It was apparent the woodshed was in session.

"I think he learned a lesson today," I told his dad. I walked toward my squad as everyone else started to leave.

But something stopped me. I turned and walked back to the young man's father. "I want to shake your hand," I said.

"Why?" he asked, with a quizzical look on his face.

"Because nine times out of 10, I'm the one who gets yelled at in these deals," I said. "It's good to get some support."

"You're just doing your job, Chuck" he answered. We shook hands, and talked a little while, and I started toward home.

After all the frustrations, it made the day a little better to know that at least in one home, the lesson of respect for wildlife, ethics, law and law enforcement was still being taught.